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THE

ANCIENT HISTORY

OF

ASIA,

AND

REMARKS ON THE ATLANTIS OF PLATO;

TO WHICH ARE ADDED,

OBSERVATIONS ON THE LEARNING OF THE ANCIENT BRAHMANS;

IN A SERIES OF LETTERS ADDRESSED TO

M. DE VOLTAIRE.

46222

BY M. BAILLY.

WITH THE LIFE OF THE AUTHOR.

IN TWO VOLUMES.

VOL. I.

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THESE Letters were written previously to the death of the Illustrious Genius whom we have so lately lost, though they were never communicated to him. Intended to explain and appreciate an opinion which carries in it a high degree of probability, and which, perhaps, under the appearance of paradox, will be found to contain much solid truth, they had by no means for their object the conversion of M. De Voltaire: it is not at the age of fourscore and five years, that a man changes his opinions for others of a contrary description. He uniformly believed that the Brahmans, who taught us so much, were the inventors of philosophy and science: the Author conceives that they were only their depositaries. The death of M. De

the Author has still the honour to address himself to M. De Voltaire. We are only liable to the suspicion of flattery, when we praise the living: he feels a sentiment of real satisfaction, in paying a tribute of homage to the ashes of that great man.

A

BRIEF ACCOUNT

OF THE

LIFE, CHARACTER, AND WRITINGS

OF

MR. BAILLY.

AMONG the multitudes who were led to execution in France, under what is called the reign of terror, there were men of illustrious talents; whose loss to the republic of letters every civilized and enlightened mind must deplore. In this fatal list we meet the names of a Bailly, a Lavoisier, a Malesherbes; characters who, whether we consider their virtues in private life, or their genius and accomplishments as men of science, do honour to the age and country in which they lived.

Notwithstanding the vast variety of histories and memoirs of the French revolution that have issued from the press, we find it not a little difficult to form a just idea of

the real character of any one of its principal agents. On this subject the passions of men are still inflamed: each writer, devoted to his own system, or party, and viewing the motives and actions of his opponents through the medium of his prejudices, or personal animosities, gives us a picture not so much of the character he affects to describe, as of the intemperate and biassed frame of his own mind. Bailly himself, to whom all parties generally are now hastening to do justice, has been represented as an enemy to the king, though he suffered death by the hands of an enraged populace, as a traitor to the people. Nor has the reign of faction and political animosity been confined to France: it has extended itself, more or less, over every country in Europe: and hence it should seem, that the present generation are equally unprepared to write, or read the lives of the chief actors in the French revolution, with historical truth and impartiality. Mean-

of the author, as the writer of this sketch has been able to collect; and which, so far as they go, he has reason to believe are perfectly authentic.

In a memoir of the French National Institute, lately arrived from the continent, we find an *eloge* of M. Bailly, which will supply us with some extracts; a work, which, besides a short analysis of his writings, contains certain interesting particulars of his life and execution. This, with Bailly's defence, taken from Pages' Secret History of the French Revolution, and some detail obtained from a gentleman now in England, who was a friend and fellow-prisoner of our author, and whose report of the tragical circumstances of his last moments, has certain shades of difference from that of Bailly's encomiast, will serve as a sketch of the life, character, and writings of that great man.

BIOGRAPHICAL SKETCH OF BAILLY

EXTRACTED FROM THE ELOGE OF SILVAIN BAILLY; BY J. DE SALES, MEMBER OF THE NATIONAL INSTITUTE OF ARTS AND SCIENCES, IN THE FOURTH YEAR OF THE REPUBLIC: READ THE 27TH FRIMAIRE, YEAR FIFTH.

J. de Sales begins his eloge of the author with laconic brevity: "I will speak truth of Bailly; and that truth is of less interest to the memory of the sage than to the glory of the nation which gave him birth. It is of consequence that all Europe should know, that at the moment of pronouncing this encomium, the tyranny of the thirty, or of the four hundred, no longer exists, and that Athens, which bruised the hemlock for Socrates, is now Athens which thought only of preparing his apotheosis.

"Bailly, born at Paris in the year [illegible], of a family in which the [illegible] pictures in the Louvre [illegible], was at first destined to the profession of a [illegible]

painter; but the prospect of consuming many years in fruitless manual labour, without a certainty that his genius should ever reach the sublime conceptions of a Corregio, or a Raphael, discouraged him, and he threw himself into the arms of literature, more attractive to a young mind, since it promises the fruition of the palm the same day it is sown.

"The first essays of Bailly consisted in tragedies: Daguesseau, Fenelon, the author of *Emile*, had composed in that department; and we are fain to quote such names when we happen to fail. The young sage, contenting himself with having made trial of his powers in silence, did not once present himself in the arena; and if he had the confidence to write for the stage at twenty years, he had the good sense at forty to throw his compositions into the fire.

"The palm of eloquence had likewise its attractions for our young candidate for fame; and though in that career he never attained to the most brilliant success, he found it more difficult to abandon its pursuit. It is

well known that he wrote an eloge of Corneille, which contended, though in vain, for the prize in the academy of Rouen; that he composed the praises of Charles the Vth, and Moliere, without being crowned by the French academy; and that he never obtained a prize but at Berlin, for a life of Leibnitz, which, however, was inferior to that of Fontenelle. We perceive rather more promising seeds of genius in the eloge of Cook and Gresset, as well as in that of his friend and master, La Caille; and he wrote a piece which balanced the claims of Condorcet for the office of secretary to an academy.

"In short, Bailly, after long groping in the dark, in order to hit upon his proper talent, ceased from the inquiry. If it required but the accelerated fall of an apple to lead Newton to the system of gravitation, a glance of the eye, cast by our sage upon a catalogue of zodiacal stars, executed by La Caille, sufficed to make him an astronomer.

"Astronomy may be regarded as the geography of the heavens, where, from certain known positions, the intelligent artist is in condition

condition to deduce others to which he is a stranger. Project an astronomer to the centre of unbounded space, he will there be anxious to reach the circumference. The slightest path he is able to discover in the firmament, invites him to find it a communication with all the great routes. We may say of the philosopher, that his ambition is stimulated by discoveries, as that of the warrior is by conquests. Bailly was ambitious, but in the manner of a Halley and a Tyco Brahé: he only aspired to lay down the general map of worlds, leaving to an Alexander the heroic insanity of atchieving their conquest.

" A position of high importance, which Bailly discovered in celestial geography, is that of the satellites of Jupiter. The masses of these secondary stars seem so little susceptible of calculation, the astonishing variety of their motions is so unfavourable to the astronomer who would determine their inequalities, that even to the middle of the present century, nobody had attempted to apply the eternal law of Newton to the mutual

attractions of those planets. Bailly, with the assistance of the theory of Clairault, and the ingenious method of Fouchy, respecting the use of the telescope, and still more from the resources of his own genius, computed with singular success, the disturbances of Jupiter's satellites; determined their diameter, as well as the duration of their immersions; constructed tables of their motions; and concluded the whole by a history of this curious part of astronomy. This most laborious pursuit, which gave occasion to three memoirs, employed him for the space of nine years; that is to say, from 1762 to 1771. After all, however, this is but a point in the general map of the heavens; and it is evident, that in order to complete it, as projected by Bailly, he ought to have lived, not to the age of a man, but that of a planet.

"Our philosopher, who imagined he had made the step of a giant, and had not changed his horizon, alarmed at the immensity of the career still before him, resolved to try what he could build on the basis of new ideas. In this view, he wished to make himself

self master of all ancient as well as modern discoveries in the southern regions of the firmament; and such was the origin of his master-piece, his admirable *History of Astronomy*.

"Bailly takes up the science from what he terms its cradle, and conducts it by a chain of facts, and luminous reasoning, to that point of time when the sublime theory of Newton came to be regarded as the gospel of Europe. This work, at once profound and elementary, instructs the man of reading and reflection, while it excites a taste for the subject in the most vulgar mind, to which it is wholly new; besides, it is written in that picturesque style which gives animation to every thing it touches, and which has been looked for in the history of all the sciences, ever since the public were charmed with the *Nature* of Buffon, and the *Academy* of Fontenelle.

"It is in this History of Astronomy that we find the germ of what some have called a philosophical paradox, but to which Bailly owed, more than to his other works, a part of his celebrity. I allude to that ingenious

system

system in which he maintains, contrary to the popular opinion, that the earth was enlightened, as well as peopled, from north to south.

" Bailly sent his astronomy to Ferney. The illustrious philosopher, who wielded from this retreat the sceptre of opinion over the whole of literary Europe, was not a little astonished at the novelty of a system which threatened to annihilate his Brahman's. He communicated his objections to Bailly in the form of doubts. The historian of worlds replied; and this was the origin of letters on Plato's island of Atlantis; letters which his eminent ingenuity, learning, and graces of style, raised in the estimation of the public to the level of the Lettres Persannes of Montesquieu.

" The great popularity, however, of his letters on the Atlantis, was accompanied with a storm. An information was lodged with a pusillanimous government against the author, for having substituted a system of cosmogony of his own in place of that of Moses. This imputation, which Bailly ought to have despised,

spised, gave him uneasiness: he was willing to indulge, as a philosopher, in his opinions, but he had no desire to carry the badge of the sect about with him. He denounced the periodical writer who had excited the terrors of fanaticism, and denounced him with such warmth, that the keeper of the seals gave notice to the editor that he should retract. This trait, perhaps of weakness on the part of the historian of astronomy, hushed the storm; and the grand inquisitor Sequier returned the interrogatories which he had prepared, into his port-folio.

"In general, Bailly was far from announcing in any part of his literary career, that heroism of character which we have seen him display in his political life. He never flattered the great; because the solitary sage who lives with the illustrious dead, and with himself, flatters nobody; but he managed them with a certain address. The Encyclopædia alarmed the throne; and though his heart was with it, he declined taking any share in the work: in short, it was Plato, but Plato who was ashamed to be found in the

the Portico, and not at the court of Syracuse.

" This policy, which the moderation of the sage prevented his condemning in others in tempestuous times, but which he took care not to imitate, contributed much more perhaps than even the genius of Bailly, to induce his cotemporaries to do him that justice which he had a right to expect from them.

" His theory of Jupiter's satellites, which obtained him admission into the Academy of Sciences so early as the year 1763; the rich erudition of his notes in the History of Astronomy, which gave him a right to that of *belles lettres*; together with the brilliant colouring of his style, opened to him the doors of the French Academy. This triple crown, which adulation at times procured to honorary members, such as Paulmy and the Abbé Bignon, but which had not before been the reward of merit, except in the case of Fontenelle, would probably have escaped Bailly, had he been supported by his excellent compositions alone. But government had not forgotten

that

that he had conducted himself with *sagesse*, or prudence; a term which, in the vocabulary of a republican, means weakness—and all difficulties were surmounted.

"I speak with regret of Bailly's prudence; but I owe more to truth than to the memory of a man of celebrity, however dear to me. I have reason to believe, that for a long period he received a pension from the court, under the name of the prize of prudence. This name, ministerial despotism gave to a pecuniary gratification conferred on the prudent man of letters, who took care not to employ his pen either against the intolerating religion of his country, or the despotism of its government. In this list were found Abbé Batteux, who had but too good a title to this mark of distinction; and the illustrious Thomas, who deserved it but little, and who had the honour to see himself deprived of it. I am persuaded that Bailly renounced the prize of prudence the moment he got a glimpse of another—I mean that for laying the foundations of a republic.

In

" In fine, whatever analogy might exist between certain ideas of liberty and the great soul of Bailly, it must be owned we shall find it difficult to discover any such germ in the style of his writings. Observe this text, taken from his *eloge* of Charles Vth, in which we anticipate wonderfully little of the memorable oath of the Tennis-court—' A king (says he) is the law *rendue vivante* . . . . .' A king is a counterpoise to a multitude of living beings: his will is a command to all, since it is supposed to be the general will of all. In the same manner would Paterculus, the adulator of Tiberius, or the titled slave who recommended the royal law of Denmark, have expressed himself.

" Bailly's genius slumbered, but its slumbers were broken from time to time, even during the triumph of his prudence, by the publication of some good works; I mean by his two Reports on the hospital of the *Hotel-dieu*, on the folly of the long famous doctrine of *Mesmerism**, and above all, by his *Indian*

* From Mesmer, the original author of Animal Magnetism.

and

and Oriental Astronomy; a work which, for depth and ingenuity of research, is worthy of Feret, but which he was incompetent to write, since he had never, like the disciple of Socrates, sacrificed to the graces.

" At last came the revolution. In spite of an ancient prejudice, begotten by an idle pride of birth, and fostered and matured by a systematic hatred of science, France, when she applied to her own regeneration, had a pre-conception that a man of letters might be a statesman; and she deposited in Bailly's unsullied hands a portion of the supreme power.

" Here we come to the most interesting part of these memoirs, a portrait of the political life of our philosopher. The portrait is finished, and I will venture to say is executed, if not with the genius, at least with all the independence of mind and plain-dealing of Tacitus; but the moment for hanging it up in the gallery is not yet arrived; the horizon of France is still deeply overcast;—too much of faction prevails, under a mask of patriotism; too much of public hatred

tred and animosity continues in a state of effervescence. I should not be pardoned by some, were I to indulge in a reasoned criticism of Bailly's character as a statesman. I should be deemed criminal by others, were I to write his panegyric; probably I should have the approbation of none but myself, and of a generation which I cannot hope to see. In the mean time, it will be more wise to throw a funereal crape over my picture, till the general peace of Europe shall endow us with other morals, other judges, and another pantheon.

" Whatever political errors entered into the conduct of Bailly, he loved his country for her own sake: he was persecuted for the good he did, and not for the faults of inexperience that escaped him; and I am fully convinced, that when France shall emancipate herself from tutelage, she will hasten to efface the opprobrium of his execution, by the splendour of his apotheosis.

" The execution of Bailly!—what a dreadful sentence I have just pronounced against my own age and country!—By what atrocious

cious violation of the social contract could men sacrifice, in the name of the country, persons, without whom, our country would be nothing but a vain phantom? And what affinity has the eternal and immutable morality of Nature placed between a scaffold and such august names as those of a Bailly, a Lavoisier, and a Malesherbes?

"On this subject I shall transcribe a few lines of a work which I printed under the name of Fenelon, about the time of the last sittings of the first legislature; a work which has not yet seen the light; nor indeed can it be of the smallest service, until public opinion, becoming worthy of the adoption of posterity, shall one day lift up its head in France.

. . . . " 'If at least the sage, become a 'victim to the ingratitude of his fellow-citi- 'zens, should perish with serenity, regarding 'his last moments as the evening of a fine 'day, consider, however, what an immense 'interval separates, at the approach of death, 'the just man, who falls a sacrifice to the ma- 'lice or caprice of a crowned despot, from

'him who sinks crushed to pieces under the 'redoubled thunder-bolts of anarchy.

"'When the preceptor of Nero caused his 'veins to be opened; when, by order of the 'tyrant of Macedon, Phocion, the last of the 'Greeks, was on his way to execution, the 'people, who did not dare to strike the op-'pressor, at least shed tears of sensibility over 'the fate of the victims. These celebrated 'men expired amidst the sympathetic regards 'of their country; they were in the presence 'of their glory, and their souls, in departing, 'had a sort of fore-tasting of their immorta-'lity:—but what compensation has social 'justice in reserve, for the hapless victim who 'perishes under the knife of the populace? 'What mind has vigour enough to remain 'unappalled by the vociferation of a multi-'tude eager to drink the blood of the pro-'scribed, by the long agonies of an execu-'tion, which, amidst every insult and indig-'nity, is protracted for three hours, by the 'spectacle of an enraged crowd, who devour 'the heart of the grand pensionary de Witt, 'and who offer, with impunity, the fragments

'of

' of that of the intendant Bertier to the petri-
' fied magistrates of a great capital?'

" The misfortune of Bailly, then, was not that of his death. Can we suppose that a sage, who had been for half a century learning to live, should dread the minute when he must die? Besides, in the terrific state of social disorganization under which France groaned at that epoch, was there one good man living who was afraid of ceasing to exist? But the long agony of three hours, which public ferocity consumed in shifting the scaffold; that immense multitude, among whom Bailly was unable to distinguish one sensible being, are circumstances which, in reality, set his torture far above all that ever was imagined by a Cambysis or Phalaris. In a word, the idea with which he was impressed, and in the belief of which he expired, that the nation he wished to make free, were to a man accomplices in the crime of his murder, served to consummate the measure of his sufferings. It is in such circumstances, doubtless, that we would be tempted to excuse the famous blasphemy of the second

Brutus—O virtue, thou art but a phantom! Bailly, in those dreadful moments, did not disappoint the opinion his cotemporaries had formed of his virtue of sixty years: he carried his eye with a serene air over that vast multitude, whose errors his sensible heart pitied and deplored: his hands being tied behind his back, he with great composure shook his head, drenched in rain, which all the while fell in torrents. A tyger with the human figure, saying to him ironically, *tu trembles, Bailly*, he contented himself by replying, *c'est de froid mon ami.* At last, when he had drank the cup of ignominy to the lees, the unfortunate Bailly saw the signal for his death given by a frantic multitude, who directed the executioner; and the fall of his head led the way to a murder still more atrocious, the execution of Malesherbes."

Address of Bailly, the immortal author of
y of Astronomy, to his fellow-citi-
taining some curious details con-
ic departure of the king for Va-
renne

rennes, Lafayette, and the affair of the Champs de Mars; extracted from Pagès' Secret History of the French Revolution.

" We shall have occasion (says Pagès), in the sequel of this work, to scatter flowers over the tomb of the celebrated, but unfortunate Bailly: we shall there render to the innocence and probity of his life, all the justice in our power. It is not a little grateful to us, that we are enabled to place them in the clearest light, from the incontestible evidence of the following document; a document almost entirely unknown, though printed at the time, under the title of *J. S. Bailly to his fellow-citizens:* for this memoir, though written with the most perfect moderation, though it censures nobody, and confines itself wholly to the defence of the accused, could not with safety be made public: not a bookseller nor hawker would venture to sell it; and this is by no means one of the least striking features of that universal oppression, under which a great people, who spoke of nothing but liberty, were doomed to groan. Alas! it but too frequently hap-

pens, that calumny seats its spectre upon the tomb-stone of a great man. Men persecute him when alive, and even when he is no more, their malice persecutes him still. We have thought it our duty to furnish a shield against the attacks which calumny may be tempted to make upon the memory of a most illustrious citizen; a man of the revolution, who was invested with the most distinguished honours, and whose sufferings are unparalelled in history. He experienced in his last moments the whole ferocity of a populace who once looked up to him as their idol, and was basely abandoned by a people who never for a moment ceased to esteem him.

" The recollection of his death brings to mind that of Condorcet, another philosopher of the first eminence, who, when loaded with chains, employed himself for the amelioration of mankind; who died with the same serenity, and who, as well as Bailly, fell a victim to certain monsters, hideous with crimes, and covered with blood, by whom we were governed.

" The

" The following piece is the more interesting, that it serves to throw much light upon events which preceded the king's flight; upon the crooked, perfidious, and ambitious policy of Lafayette, as well as upon the famous day of the Champs de Mars."

J. S. BAILLY TO HIS FELLOW-CITIZENS.

" I was summoned as a witness in the process of Marie Antoinette. I found myself named and criminated in her deed of accusation. When I gave my deposition, I was questioned with respect to what passed on the 17th of July, in the Champs de Mars; I was interrogated as to my connection with Lafayette and Larochefoucault. It was supposed that I had maintained a criminal correspondence with the court. I was told of secret meetings in the castle of the Tuilleries. My answers, how conclusive and satisfactory soever, could only be heard by the citizens who were present at my examination.

" The man who has occupied an important public situation, owes the people an account of his conduct in the exercise of the functions with which they entrusted him. . . . . I come then to discharge that duty.

" The deed of accusation preferred against Marie Antoinette bears : ' It is true, according to the declarations of Louis Charles ' Capet, and of the girl Capet, that Lafayette, ' in every view the favourite* of the widow ' Capet, and Bailly, then mayor, were present ' at the escape from the Tuilleries, and that ' they favoured it by every means in their ' power.'

" It is false, that I was at the Tuilleries on the 20th of June. It is false, that I favoured,

* Who would not infer from these words—*in every view a favourite*—that Lafayette enjoyed high privileges in the queen's favour ?—The queen could not bear him, and used to say to her friends frequently, " shall I for ever have this *blondin*, or pale-faced fellow, before my eyes ?"—This anecdote we have from persons perfectly worthy of credit. The court only took up with Lafayette, because, as commandant of the national guard, it might be in his power to thwart and disconcert the projects of their opponents.

in

in any shape whatever, the escape of the family of Capet. On the contrary, it is true, that I did every thing which depended on me to impede and prevent it.

" When I was informed of the declaration of Louis Capet and his wife, I requested the president of the court to desire that the accused should state, 1st, at what hour Louis and she left the Tuilleries on the 20th of June; 2dly, if I was present. The president replied, that the accused had anticipated my questions in the signed declaration, by stating, 1st, that they set off from the Tuilleries between eleven and twelve at night; 2dly, that I was not present. The testimony of the mother then destroys that of the children.

" We had heard for several months, of the approaching escape of Louis. I transmitted regularly to the Committee of Inquiry what information came to my knowledge. These rumours gained ground on the 19th and 20th of June. I had been for seventeen days confined with a sore throat; I was just beginning to get out of bed. On Monday the 20th, in the evening, upon receiving farther intel-

intelligence, I procured a meeting at my house of three municipal officers in the neighbourhood, for the purpose of having their advice, as to what steps circumstances might render it proper for me to take.

" I sent in search of the commander in chief: I dressed in all events. The citizen Cochon, then a member of the Constituent Assembly, and of the Committee of Inquiry, came to inform me of what he had learnt, and was a witness of all that passed on the occasion at my house: he is qualified to give evidence on this point. When the commander in chief arrived, we communicated to him the intelligence we had received, as well as our own apprehensions. He replied to us, that he would go instantly to the castle; that he would give the strictest orders; and though the project circulated by report appeared to him by no means probable, at any rate he perfectly knew how to prevent its execution. Lafayette went accordingly to the Tuilleries: he returned to the mansion-house somewhat after twelve. He reported, that every grate in the castle was secured;

cured; that he had changed the *parole* at all the gates: he added these words, which I perfectly recollect, that *a mouse could not escape from it.* He assured us, that major-general Gouvion would pass the night in person at the gate of Villequier. Such are the facts, which are in the knowledge of the persons I have just named: the keeper, the house-porter, Jean Baptiste Mousson, actually in my service, my former coachman, named Bellanger, a man called François, inspector of lights, as well as all those who were at that time in my employment, can also certify, that on the 20th of June I did not quit my own house.

"It is well known that Louis and his family set out with a passport obtained at the house of Montmorin, under the name, if I remember right, of the baroness de Knoff. Some days before the escape, when listening to an extract of my letters, which was read to me, somebody told me that Mr. Simolin, the Russian minister, had applied to me for a passport to the baroness de Knoff. I had some ready signed in my possession, which had

had been delivered to me by the minister. After a moment's reflection, I said: 'But why does the Russian minister send to me for a passport to a stranger?—he ought to apply to the minister for foreign affairs.'—I sent the messenger back to his minister. Thus I was fortunate enough to escape a snare that was laid for me. Every body knows Montmorin declared that he had granted two passports, under the pretext that the first was burnt.

"It is false, therefore, that I was present at the escape of Louis and his family, and that I favoured, by all means in my power, that licentious project. On the contrary, it is perfectly true, that I did every thing which depended upon me to impede and prevent it.

"I was told of secret meetings held in the Tuilleries. These secret meetings, as they pretend, were composed of men of intrigue, and members of the Constituent Assembly; Mirabeau, Barnave, Lameth, &c.; and it seems to have been believed that I assisted at them. I declare that they were entirely unknown to me; that I never assisted at them;

them; and that I never had the slightest acquaintance with any of those who have been regarded as leaders of a party, such as Mirabeau, Barnave, the two Lameths; that my connection with Lafayette was imposed upon me by the reciprocal relation of our places; that the confidence I once reposed in him, especially during the first year, was dictated to me by the nation at large; but that my communications with him were merely official, and that I never for a moment had his particular confidence*.

« It has been said, that among other secret meetings, there was one held at the house of Larochefoucault. My answer to this

* In fact, what point of contact, what union of views could there exist, other than was commanded by the situations they held, between an intriguer, a courtier, a man treacherous and hypocritical, and a philosopher who confined himself strictly to the duties of his office; a stranger to every species of cabal; but who, for that very reason, was not in a situation to counteract them? Besides, if Lafayette was ever so culpable the 5th and 6th of October, and the 20th of June, neither he nor the court were at all to blame on the day of the Champs de Mars.

was,

was, that I indeed knew that some deputies, and among others Lafayette, met frequently in the evening at the house of Larochefoucault, but I never was there even once.

" I was told of the unfortunate day of the Champs de Mars. It was alledged, that it was a conspiracy to procure the assassination of the patriots. I replied, that the municipality of Paris and myself had no knowledge or suspicion whatever of any plot against the lives of the patriots. The National Assembly, informed of certain meetings that were forming, for the purpose of opposing a decree passed the evening before, resolved, that every species of opposition which assumed the shape of resistance to the law, became criminal; and ordered the department and municipality of Paris to prosecute such meetings by all the means the constitution had placed in their hands. The minutes which exist in the records of the National Assembly, as well as of the municipality, serve to prove that the municipal officers, early in the morning, made it their business, by means of persuasion, to diperse those riotous assemblies.

Afterwards, when the municipality in form, and in a body, entered the field of federation, the public well know that the magistrates had not time to observe the forms of proclamation prescribed by the law; that the municipality and the national guard were assaulted with a shower of stones; and that one of the mob fired a pistol, pointed against the municipality, the ball of which, after passing behind me, lodged in the thigh of a trooper of the line who had joined the national guard, and who died of his wound.

" It has been alledged, that the persons who were guilty of that riotous conduct, and of the above murder, had no concern with the citizens assembled at the altar of the country. But it must also be recollected, that the national guard only fired at the glacis, whence issued the stones, and the shot of a pistol. It is added, that the people who occupied that glacis had been sent thither by Lafayette and myself. This article of charge is without proof, and absolutely false. I make this affirmation, so far as regards myself. Besides, it is evident, that if those

those people had been our agents, they would, doubtless, not have fired either against the municipality or me.

" But, say they, Lafayette made his peace in June 1791 with the Lameths, and they plotted in concert for the destruction of liberty. I know not what men with whom I never had any intimacy, might plot. I indeed saw *that* reconciliation, and was a good deal surprized at it *. But no man can say that I was reconciled to the Lameths; for I never had either quarrel or connection with them of any kind. I do not believe that I have spoken to either of them, since the revolution, two minutes at a time. I never had any habitual connection with the deputies, except what the business of the city gave occasion to in the different committees. If Lafayette lent himself to intrigue, he was too well acquainted with my loyalty, to entrust me with the secret.

* Besides, Bailly has already observed, that Lafayette never preserved his confidence but the first year. With all his unsuspecting good nature, it was not long before Bailly detected the duplicity of Lafayette.

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"As to my connection with the court, one circumstance presents itself, which is well fitted to prove my innocence in this respect; I mean, that among the great number of vouchers found with the papers of Louis, or in the house of Laporte, or in the iron chest, there is not one that can expose me to the slightest reproach. This is not all: I am indeed named in those vouchers, but it is where I am treated as an enemy. Some attack me with their raillery, and seek to turn me into ridicule (see the letters of Cazotte); others, Talon, for example, says, 'Sire, if you should make such sacrifices, Bailly will wait upon you with his fine speeches.'—Others observe, and that at the date of 1791, 'that such measures would be taken with the mayor, as will prevent his giving us further embarrassment.'—In short, there were men among them who talked of bringing me to the block.

"I have gained nothing by the revolution: I have lost by it situations that were useful to me; and my fortune is nearly ruined. I have occasion, my dear fellow-citizens, for

your esteem. I well know that sooner or later you will render me justice; but I have occasion for it while I am alive and am with you. I have merited it by the experience of fifty years uniform integrity: almost three years that I have been wholly devoted to your interest, without other reward than your esteem, cannot fail to increase and confirm it.

(Signed) "BAILLY."

Bailly communicated the above memoir to a companion in prison, a man of great talents, and his friend. "If they read this memoir (said he to him), it is impossible they should condemn you."—'They will not read it (answered Bailly); and if they did read it, they would condemn me nevertheless: they want my head, and they will have it. I am persuaded such is their rage, that they will change the usual mode of punishment on my account; they will not think it cruel enough.'—He then added, 'this idea afflicts me, not for myself, but for the sake of the unfortunate victims who will be

be slaughtered after me; for the death of the guillotine is very gentle.'

Presently after the mockery of his trial, Bailly was pinioned on a cart in the prison-yard, and led forth to execution through the streets of Paris. His countenance presented a composed and dignified serenity, equally free from the expression of fear and of resentment. When he arrived at the *Place de la Revolution*, the tygers of St. Antoine and the Palais Royal had already planted themselves round the guillotine. The mere shedding of his blood according to the usual practice, as he had but too well predicted, would not satisfy them: they were prepared to embitter his last moments by circumstances of peculiar barbarity. He was going to mount the scaffold, when a cry was heard, *au Champs de Mars!—Au Champs de Mars!* was instantly vociferated by the whole multitude. It was a cold, wet day, in the month of November: his bosom was open; and his hands, tied behind his back, were restrained from wiping away the moisture that ran from his nostrils. Goaded as he was with outrage and indig-

nity, exposed to a cold at the freezing point, denied the sympathy of a friend, and impressed with a belief that the whole nation were accomplices in his murder, a delay of three hours would have broken the spirit of almost any other man; but the heroic constancy of our venerable sage was unshaken, and he stood collected amidst the furv of the storm:

Si fractus illabatur orbis,
Impavidum ferient ruinæ.

At length the scaffold was transported, with their victim, to the field of Mars; but there, too, the malice of his persecutors broke out with fresh violence. It was clamoured among the crowd, that the field of Mars ought not to be prophaned by the blood of a traitor; and the sage's patient sufferings were again to be prolonged, until the instrument could be removed to a ditch without the limits of the Champs de Mars, towards the river Seine. The executioners were once more occupied in erecting the scaffold, when the tygers, male and female, known by the name of *les furies de la guilotine*, set fire to the

fatal

fatal red flag, which, by way of insult, they had attached to the cart, dancing round it hand in hand, taking care, at the same time, that the wind should carry the smoke into Bailly's face. It was oppressive to his breathing, and he turned his head, in order to avoid it, when he was accosted by a monster who stood by him, "*tu fais de grimaces, Bailly!*" "*Tu trembles, Bailly!*" cried another. The sage, who died like Plato's first man, amidst the foulest opprobrium, calmly replied, "*c'est de froid mon ami.*"—They spit upon him! frantic wretches, in the pay of his enemies, pressed forward to strike him, in spite even of the executioners, who were shocked at the enormity of their rage. They covered him with mud; and the scaffold of the president of the Tennis-court was erected in all the misery of a dung-hill. He requested once and again, that they would put a period to his agony; but every word he uttered was with the calm of innocence, and with a serenity worthy of one of the greatest philosophers of the age. He was at last permitted to lay his neck upon the block; and the axe

of the guillotine sent him to the last asylum of virtue, to the reign of order, intellect, and science. Thus perished the illustrious author of ancient and modern astronomy! In stature he was above the ordinary size, and his person, though thin, was of a noble presence: he was mild, humane, and unassuming in his manners; and as a philosopher and scholar, eminent for his eloquence, ingenuity, and learning.

Pagès concludes his account of Bailly by the following note: "Such (says he) was the end of that man, who made the discovery, not only of the existence, but even of the local situation where a learned people, anterior to all the nations we know even by tradition, lived and flourished: history, mythology, existing monuments, geography, astronomy, all coincide in proving the reality of his discovery."

ADVERTISEMENT.

IN the History of Astronomy published last year, mention is made of a people lost and forgotten, who preceded and enlightened the most ancient nations that are known. It was observed, that the light of science and philosophy seem to have descended from the north of Asia, or at least to have flourished under the fiftieth degree, before they penetrated into India and Chaldea. The author had no desire to advance paradoxes, but simply to state what he found warranted by facts. These ideas, though new, are founded in the highest probability, and have had their advocates as well as critics. But the ideas themselves, explained in the History of Astronomy, though but an accessory to the principal object, merit, as it has been imagined, a separate discussion; which, by exhibiting their probability and proofs, may afford a reply, by way of anticipation, to difficulties

and objections. As M. de Voltaire has suggested various difficulties, the author took the liberty to communicate to him the following elucidations: he considers himself highly honoured by examining the question in his presence. It is not a little pleasing to converse with a great man; it is natural to submit our ideas to his review. The letters he wrote to the author, have been prefixed to the work, in order to shew his doubts, and to entice the reader, by the charm of his style, to take an interest in the question discussed.

LETTERS,

&c. &c.

FIRST LETTER FROM M. DE VOLTAIRE TO M. BAILLY.

Ferney, 15th December, 1775.

I AM to return you many thanks, Sir, for having received the same day a large book on medicine and your astronomy, when still considerably indisposed. I have not yet opened the first; I have almost finished the other, and am better.

You might entitle your book *The History of the Heavens*, with a great deal more propriety than the Abbé Pluche, who, in my opinion, has executed nothing but a miserable romance. His conjectures have no better foundation than those of that old simpleton, who pretended that the twelve signs of the Zodiac were evidently an invention of the Jewish patriarchs; that Rebecca was the sign of the Virgin before she married Isaac; that the Ram was the same that Abraham sacrificed on Mount Moria; and that the Twins were Jacob and Esau.

I discover in your book, Sir, a profound knowledge of all authentic as well as probable facts. When I have finished it, I shall have no desire but that of reading

reading it again: my eyes of four score and two years will still afford me that gratification. I am entirely of your opinion, when you say, that different nations could not possibly agree in the same methods, the same species of knowledge, and the same superstitions and fables, if the whole were not derived from a primitive nation, who taught and misled the rest of the world. Now, I have been long accustomed to consider the ancient dynasty of the Brahmans as that primitive nation. You are no stranger to the works of Messrs. Holwel and Dow: you particularly refer to the good man Holwel.

You would, doubtless, be astonished, Sir, at the fragments of the ancient Shastabad, written about 5000 years ago. This is the only monument of some antiquity that exists on earth. It required all the pertinacity of an Englishman to search it out and learn it. I had some suspicion that the government of Calcutta might have assisted the text: I was at pains to inform myself from the governor of the English East India Company, who came sometimes to see me, and who is one of the best informed men in Europe. He assured me that Holwel is truth and simplicity itself. He could not sufficiently admire his courage and patience, in learning the ancient sacred language of the Brahmans, which is now only known to a small number of themselves at

In short, Sir, I am satisfied that every thing we have, came from the banks of the Ganges; astronomy, astrology, metempsicosis, &c. &c. . . . .

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I cannot enough acknowledge the goodness with which you honour me.

Accept, Sir, the most sincere and respectful esteem,

The Old Invalid, VOLTAIRE.

SECOND LETTER FROM M. DE VOLTAIRE.

Ferney, 19th January, 1776.

I MUST still presume, Sir, to ask your pardon in favour of the Brahmans. The Gangarides, who lived under so fine a climate, and on whom Nature lavished all her bounty, ought, one should think, to have had more leisure to contemplate the stars than either the Calcas or Usbek Tartars. As to the Portuguese, Spanish, Dutch, French, and English Tartars, who went to ravage the coasts of Malabar and Coromandel, they probably destroyed the sciences in those countries, as the Turks destroyed them in Greece. Our India companies have been any thing but academies of sciences. . . . . .

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I can well believe that our European soldiers landed in India, and our clerks, still more cruel and thievish, somewhat molested the studies of those schools which were consulted by Zoroaster and Pythagoras. However, we have not yet burned Benares: hitherto the Spaniards have not established their inquisition there, as at Goa; and I have been assured, that in that city, perhaps the most ancient in the world, there are still men of learning.

The Tartars, who have descended oftener than once, in order to subjugate this delightful country, yet respected Benares; and there is also in its neighbourhood a large country, where what is called the golden age still exists.

What ever appeared among us from European and Asiatic Scythia, but tygers, who devoured our lambs? It is true, a few of these tygers shewed some little taste for astronomy when they could find time, after sacking the whole north of India. But can we believe that these tygers set out from their dens with globes and cross-staffs? Nothing can be either more ingenious or more true, than what you say of the first observations, which could only be made where the longest days are of sixteen, and the shortest of eight hours. But it appears to me, that the Indians to the northward, who dwelt in *Cachemire*, near the 36^{c}, might be in a situation to make that discovery.

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In short, what disposes me to have such a partiality for the Brahmans, is that mass of honourable evidence which antiquity has transmitted to us in their favour; it is those astonishing travels undertaken from the extremities of Europe, for the purpose of studying under them. Was ever a Grecian philosopher seen to go in quest of science to the country of Gog and Magog?

It is true, the Brahmans of the present day, who reside at Tanjour, are mere copyists, who labour in a sort of routine, and whose studies we have not a little deranged. But consider, I pray you, that there is no longer a Plato at Athens, nor a Cicero at Rome.

What I know with certainty, is, that you quote books far from being of equal value with your own; that I am extremely obliged to you for having sent it me for my instruction; and that I beg you will excuse me, if I have some scruples on one or two points. Doubting serves to establish the faith.

I have the honour to be, with gratitude, and with the most respectful esteem, &c.

The Old Invalid, VOLTAIRE.

THIRD LETTER FROM M. DE VOLTAIRE TO M. BAILLY *.

Ferney, 9th February, 1776.

YOUR conduct, Sir, is like that of the missionaries, who go to make converts of the natives in the countries of which we speak. The moment a poor Indian gives his assent to creation *ex nihilo*, they lead him on to a multitude of sublime truths, which overpower and stupify his senses.

You are not content with teaching me truths long unknown; you still insist that I shall believe in your ancient lost people. I own I feel myself a good deal shaken, and am not very far from being a convert. First of all, your ingenious and probable conjecture, that astronomy must have taken its rise in climates where the longest day is of sixteen and the shortest of eight hours, has made a very sensible impression on me. It is only my weak predilection for the ancient Brahmans, the masters of Pythagoras, that in some degree restrains me. I read Bernier a long time since. He has neither your science, nor your penetration, nor your style. He seemed to me to speak of the ancient philosophy of India, as an In-

* This letter has already been printed, at the end of a Commentary on the works of the author [illegible]

dian would speak of our's, if he had only conversed with a batchelor of an European university, instead of learning it from you. I know Bernier made a little excursion to Benares; but did he converse with the few Brahmans who understand the language of Shastah? Two directors of the English board at Calcutta, at no great distance from Benares, told me some time ago, that the truly learned Brahmans have little or no communication with strangers. . . .

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However, Sir, it appears very surprizing to me, that a people who, doubtless, cultivated the sciences five hundred years, should have sunk into that gross stupidity which is imputed to them by Bernier, and other writers. How is it possible, that in the same city men should invent geometry and astronomy, and believe that the moon is fifty thousand leagues beyond the sun? This contrast gives me pain; but the story of Galileo and his judges used to give me more, and I could not help saying with Harlequin, *tutto il mondo è tutto come la nostra famiglia**. I came afterwards to be of opinion, that a nation might have been once very learned, very industrious, highly respectable, and at this day be in many respects very ignorant, and perhaps even contemptible, though at the same time that country might have many more schools than formerly. Were you to go, Sir, and

* All the world is made like our own family.

order

order the sacred college to supply you with a quinquereme, I am doubtful if they could execute your commission. . . . . .

You will take my full confession. I remember that in former times our nations of the temperate zone had no idea that the earth was inhabited beyond the fiftieth degree of northern latitude; and I used to give my Brahmans much credit for having divined that the longest day of summer was double the shortest day of winter. I could excuse the Greeks for having placed the Cymmerian darkness precisely at the fiftieth degree.

In short, Sir, you will above all pardon me, if the weakness of my organs will not permit me to believe that astronomy took its origin among the Usbek or Calcas Tartars. I inhabit, as I have inhabited upwards of 20 years, a climate loaded with frost and snow, hideous as their's for six months of the year at least: our summers afford us but seldom fine days, and never fine nights. I had long at my house a very amiable Tartar, sent by the Empress of Russia: he informed me, that Mount Caucasus is not a bit more pleasant than Mount Jura; and I imagine one would scarcely become a diligent observer of the stars under so dismal a sky, and destitute of every necessary assistance. The Abbé Chape observed the transit of Venus over the sun at Tobolsko, near the 58°, on a soil excessively cold, and under a very clouded atmosphere;

but he was furnished with all the science of Europe, the best instruments, and a robust constitution; he died, however, soon after, of the extreme fatigue.

Thus I have uniformly been persuaded, that it is in the country of fine nights alone, where the study of astronomy must have begun. The notion, that our poor globe was once hotter than it is at present, gives me little concern. I have never read the Central Fire of M. de Mairan; but since we have renounced our belief in Tartarus, I apprehend the doctrine of central fire can obtain but little credit.

The Phœnix never appeared to me to be an invention of Caucasus, but, in one word, Sir, every thing you advance seems to me so fraught with erudition, and so powerfully supported by probable evidence, that I sacrifice all my doubts to the irresistible light of your superior knowledge.

Your book is not only a master-piece of science and genius, but contains one of the most probable of systems: it will do you infinite honour. I thank you once more for your goodness, in affording me the high satisfaction I have received from it.

I hope you will excuse my small scruples: you efface them from my mind, and leave nothing in their place, but that tender esteem and respectful gratitude with which I have the honour to be, &c. &c.

VOLTAIRE.

FIRST LETTER FROM M. BAILLY TO M. DE VOLTAIRE.

[Exposition of the ideas which will be developed in these letters: examination of the question, whether the ancient nations in general, as far as they are known, and in particular the Chinese, have been inventors in science.]

Paris, 10th August, 1776.

SIR,

I MAY very probably have somewhat of the zeal of the missionary, and even of his perseverance; *for I still continue to desire that you will believe in my ancient lost people.* I do not the less esteem the Brahmans, whom you have taken under your protection. They would be not a little proud, if they knew that they had such an apologist: more enlightened than them, you have at this day the reputation which they enjoyed in ancient times. 'A man goes to Ferney as he used to go to Benares': but Pythagoras would have received more instruction from you; for the Tacitus, the Euripedes, the Homer of the age, has more merit in himself alone, than that ancient academy.

I know the high antiquity of the Indians; nor do I doubt of the knowledge they possessed. It has been by their

their means that Europe has been enlightened: the philosophy of the Greeks was no other than that of the Brahmans': *hence that mass of evidence which antiquity has transmitted to us in their favour.* But was this knowledge the original produce of India? Might it not take its origin, with equal probability, in China and Chaldea? Here is an important question, which I do not despair I shall be able to resolve.

We shall not disagree in distinguishing epochs. I ascend beyond the period at which you stop. You condescend to inform me, that *you are a good deal shaken, and not very far from being a convert.* Such a conversion would be infinitely flattering to me, if I could believe in it: but I still meet with doubts, even in your last letter. I am too much interested in your opinion, and too anxiously solicitous to come at the truth, not to enter into a certain detailed discussion, which may terminate in enlightening me by your fresh objections, or in convincing you by my replies. If I had not the interest of truth so much at heart, I should be cautious of entering the lists with my master: but we are not to consider the matter in that light. On the present occasion there is no contest, nor even a literary dispute: it is a conversation held in the academy where Pluto presides; and a disciple of the philosopher proposes doubts, in order to receive instruction.

As to astronomical facts, Sir, we have no difference of opinion: they are accurate. I endeavoured to collect and present them under that point of view which is best fitted to shew the steps and progress of the human mind. We differ only in respect of some ideas prefixed to my work on the History of Ancient Astronomy: they are the result of my labours and inquiries; but, at the same time, they may be considered as the basis of the edifice: they refer to those ancient, and, so to speak, primitive ages, which wrap up in their obscurity the invention of things. We will distinguish, if you please, between what I stated as truths, and what I proposed as conjectures.

I have said, that in considering with attention the state of astronomy in China, in India, in Chaldea *we there find the wreck, rather than the elements of a science.* Were you to see, Sir, the house of a peasant built of pebbles mixed with the fragments of columns, in a beautiful style of architecture, would you not conclude that they were the ruins of a palace constructed by a more able and ancient architect than the inhabitants of that house? The people of Asia, the heirs of a pre-existent people, who had the sciences, or at least astronomy, in an improved state, were depositaries, and not inventors. This I believe to be true, even in respect of the Indians; and I shall endeavour to prove it at greater length. I have added

that

that certain astronomical facts belong to a considerably high latitude in Asia: this is also perfectly true. As these facts are extremely ancient, I thought they might serve to point out the country of a primitive people. I have conjectured that the sciences, the growth of this northern latitude, had descended towards the equator, to enlighten the Indians and Chinese; and that, contrary to the received opinion, the light travelled from north to south. I have made this conclusion, not as a demonstrated truth, but as a highly probable opinion; and I finished by a sort of philosophical romance. The greater part of ancient fables, regarded in a physical point of view, seem to belong to the northern regions of the globe: one should think that their united interpretations mark the successive stages of the human race, and their route from the pole towards the equator, in quest of heat, and days of a more equal length. If this picture appeared to me singular, and curious enough to be offered to the eye of the public, I have not thought of exhibiting it as a truth; I have not even chosen to reduce it to a system.

Thus, Sir, you perceive what I have advanced, and what it will now be our business to examine. In the first place, let us attend to the ancient nations of Asia, the Chinese, the Chaldeans, the Indians, and observe whether it be probable that they should have been inventors. The spirit of invention does not

fall to the share of every age; but at the same time, if certain nations, in a long period of their existence as a people, are entirely destitute of it, we must, undoubtedly, view this as an effect of the influence of climate, and a result of national character. There are certain qualities, there are certain phenomena, which have been discovered by accident; but it rarely happens that chance takes Nature thus by surprize: in general, she shews herself to such only as solicit her acquaintance. There is no such thing as invention without research, or genius without activity. Invention essentially depends on a certain restlessness of mind, which is constantly drawing a man from a state of repose, to which he has as constantly a tendency to return: it supplies him with strength to surmount obstacles; transports him to the spheres of the world, and to all the dominions of Nature. When a nation is embroiled with war and a factious spirit, or debased by slavery and oppression, that restlessness, fed by a different aliment, will extend itself to objects more gratifying to ambition and interest; or it will be enfeebled by the oppressive weight of servitude, and may be totally extinguished, together with that intellectual energy so necessary to every species of exertion. Among a quiet and happy people, it will necessarily give rise to the gradual improvement of the arts and sciences: it will shew itself by its effects. If, then, there exists a people who pursue their observations

servations rather from custom and habit, than from taste; who are desirous to see in the phenomena what they have already seen, rather than to discover something new; if, always satisfied with what they possess, they have no manner of desire to become rich, to increase their stock of physical facts; of what use would genius be to such a people, or the power of collecting and comparing them? Besides, who could give himself the trouble to exercise that faculty, were indolence to form the basis of their character; were they enslaved by a reverence for custom; or were new ideas to have no merit, and to confer no honour, but in as far as they were in conformity to the old? This people are without energy and without mental activity. Have I not a right then to infer, either that Nature has with-held it from them, or that their national institutions have bereaved them of it? The strength of the body is annihilated by inactivity and the refinements of luxurious manners: there is, in like manner, a sort of intellectual effeminacy; the powers and faculties of the mind are dissolved in a state of repose. The moment the thoughts of the ancients become alone admissible, the imagination is shorn of its wings, and genius loses its spring: to those gifts of Heaven, succeeds a languor, an apathy, which counteracts every species of new creation. This you observe, Sir, is the history of the Chinese. None can know them better than such as have re-

sided long among them. Father Perennin was a man of good information: he had sense and discernment: he is a credible witness on the present occasion. "If (says he) the Chinese, from times of high antiquity, have made no progress in the improvement of astronomy, it is because they have been nearly of the same character and genius with their posterity of the present day; a superficial indolent people, averse from all application; who prefer a present and solid interest, as they consider it, to the vain and fruitless honour of discovering something new in the heavens. Their astronomers, made responsible to the court, deprecate any new phenomena, as much as we desire them in Europe. The Chinese make themselves believe that every thing ought to be as uniform among the stars, as in their families and empire. Each new appearance in the skies, is a sign of Heaven's wrath against the master who governs, or against the wicked Mandarins who oppress and plunder the people. We may hence judge of the reception the astronomers have to expect from the despot and his court. I might well compare (adds Father Perennin) such as keep watch day and night in the observatory of Pekin, to the piquets and advanced posts of our armies, who wish nothing less than to see the approach of the enemy, since they having nothing to gain by it but blows."†

† Lettres Edifiantes, tom. xxiv. p. 25.

If the president of the mathematical tribunal should happen to be a rich man, a lover of the sciences, and ambitious of their improvement; if he should discover zeal to increase the stock of their observations, or to reform their practice as observers, he would soon excite an insurrection among his colleagues; they would rise in violent opposition to the introduction of a new practice, from the terror of committing faults constantly punished by a retrenchment of their pensions. What is this, they would say, but to seek to die of hunger, that we may be profitable to others*? Judge, Sir, if such a disposition be favourable to the success of science. Had the same manner of thinking prevailed in Europe, we should have had neither a Des Cartes, a Galileo, a Cassini, nor a Newton. I can easily believe it is only the learned vulgar who express themselves in this manner. But if the men are but few who rise to distinction, do not the great exertions of Nature bear some proportion to her more ordinary efforts? Is not the elevation of thought in men of genius, relative to the actual standard of minds in general? Though he may carry his head above the crowd, yet, if that crowd should consist of dwarfs, he will after all be but a little man.

It is this aversion from every thing new, that has prevented the astronomers of the observatory of Pe-

* Lettres Edifiantes, tom. xi. p. 95.

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kin from adopting the use of glasses, for objects which escape the eye, as well as of clocks, for obtaining precise portions of time. The palace of the Emperor contains them in great abundance; instruments which have been executed by the most able artists of Europe. The Chinese copy and imitate them with a good deal of address. The use of them, therefore, might easily be rendered general: but those clocks and telescopes remain in the cabinet of the palace, without exciting the smallest sentiment of emulation; just as the apish figures they send us in return for them, repose on our chimney-pieces, without ever tempting our celebrated sculptors to adopt them as models. The Emperor Cang-hi made the astronomical tables be revised and reformed, and a part of those beautiful instruments he placed in the observatory; but he never thought of ordering the use of them in the practice of his mathematicians*.

The Chinese ships are miserably constructed; and though the natives cannot conceal their admiration of those which carry us upon their coasts, their shipbuilders, nevertheless, seem surprized that they should be proposed to them as models for imitation. They tell you, that their workmanship is according to the ancient usage of China; and if you should still urge the objection, by shewing that this usage is bad, they will reply, that it is sufficient for them that it

* Lettres Edif. tom. xxi. p. 95.

has

has been established in the empire. You will observe, Sir, that this is not merely the effect of national prejudice against whatever comes from a foreign country. The pride and self-conceit of a powerful people, ever isolated from the rest of the world, may, no doubt, contribute to promote it; but it proceeds chiefly from a veneration for custom, confirmed by long habit, and now nursed and protected by a rooted indolence. Variety, which is far from constituting a want in China, ceases there to be a spur to invention. The over-ruling power of habit, makes the days of a Chinese pass in dismal uniformity. Every part of his conduct is prescribed; his pleasures are for ever the same; the sun never rises to him, but to witness the same routine of things; his rules of ceremony are entered in a book, written more than three thousand years ago; for the laws of civility and politeness in China, are of more ancient date than those of justice in Europe. But those laws which serve to define and dictate the most minute actions, the exact form of words, and number of obeisances, are, perhaps, one of the causes of the little progress they have made in knowledge. The attention of a Chinese can scarcely keep pace with duties of every moment. Such a multitude of ceremonious observances leave the mind, hampered as it is, but little time for active pursuits. The drilled horse which performs listlessly in his circle the busi-

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ness of the riding-house, has neither the bold and spirited gait, nor the animated and vigorous spring, of a horse at liberty.

If in the long duration of the Chinese monarchy, an astronomer appeared, who distinguished himself by some spark of genius, that dawn of light was of short continuance. Upon his decease, his inventions were lost, or rather neglected, and his methods wholly abandoned. Cocheou-king, a famous astronomer, and worthy of some esteem, in the 13th century superintended the construction of very handsome instruments; and it is probable some of them were even of his own invention. They are still preserved with much care; but they are locked up in an apartment which nobody ever enters, and to which the Jesuits, with all the credit they possess, have never been able to get access *. You will see, Sir, in the History of Modern Astronomy, that time and the patience of the Chinese, have made, from time to time, certain distant steps towards the improvement of science. These, however, consist in remarks of a simple nature, which constant observation brought under their eyes. It was thus they found out the inequality of motion in the sun and moon, perfected the period of their revolutions, and discovered the motion with which the stars move slowly along the ecliptic. But

* Souciet Recueil des Obser. Faites aux Indes et la Chine, tom. ii, p. 108. and 115.

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the greatest part of these notable discoveries perished with their authors: the succeeding generation would not condescend to avail themselves of them. Nature is like a fortress, which has been in a state of siege since the beginning of the world; we endeavour to storm the out-works; and men make their approaches in succession, by raising themselves one upon the shoulders of the other. At no period have the Chinese derived any advantage from the labours of those who came last; and hence I conclude that they never possessed the genuine spirit of science; or, to express it in one word, that they have been utterly destitute of genius. We find in their works no knowledge whatever of causes; nor do we perceive in them any thing like sure advances, founded in principle: they resemble those who go on groping their way in the dark, according to certain marks or indications they had received: they have no better claim to the invention of astronomy, than the blind have to the invention of optics. For many centuries, the Chinese have been acquainted with the period of nineteen years; the period which brings back the new moons to the same day of the month; the period which was known generally through the whole of Asia, and which Meton introduced into Greece, where it was styled the golden number: but in order to improve it, they contrived periods of less accuracy: they were

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consequently unable to discern its real value; a circumstance which serves to prove that it had been actually invented at a time when the motions of the sun and moon were better understood. The idea of its precision was first gradually weakened, and afterwards lost. The fact seems to be, that when this period was introduced among the Chinese, they were not in a condition to estimate its merit; and therefore we may apply to the cycle of nineteen years, all that we observed of the period of six hundred years, misconceived and forgotten since almost four thousand years.

Every thing conspires to lead us to the ancient astronomy that is lost; and above all, the endeavours made by the Chinese for its recovery. They are persuaded that their first emperors, Fohi, Hoang-ti, and Yao, were perfectly acquainted with this science; that its principles are concealed in certain monuments, and particularly in Ly-king. Fohi, according to them, was the father of this astronomy; and it is for this reason they search for the true astronomical principles in those mysterious lines named *Koua*, which are the production of that emperor. They also seek them in the tubes of bamboo which furnished the music of Hoang-ti. The numbers of heaven and of earth, combined by Confucius, and so many others, are likewise of the same time. It is not more ridiculous

culous to search for astronomy in an instrument of music, than for the secret of the philosopher's stone in the verses of Homer.

But however absurd this prejudice of the Chinese, and how extravagant soever we may deem this irksome sort of inquiry, the strong belief they entertain, that the monuments of Fohi contain an ancient astronomy established by that emperor, is a proof, not only of its existence among them, but that it was introduced into China by Fohi. We find in the Chou-king, a sacred book among the Chinese, and of great antiquity, that this astronomy contained doctrines of considerable refinement. Fohi, say they, constructed astronomical tables, assigned a figure to the heavenly bodies, and taught the science of their motion. The solstitial and equinoxial points were then discovered*: and, soon after, we find the invention of the sphere, the actual period of the year, consisting of 365 days six hours, with the bissextile year, as well as the lunar periods reconciled to the motion of the sun. I have good reason to be of opinion, that all those branches of science belong to the time of Fohi. Otherwise, the Chinese, who are entirely stationary as to this subject, must have made great progress in astronomy in a short space of time; and above all, at its beginning, the period when each step of advancement is in a peculiar degree slow

* Hist. de l'Astr. Anc. lib. iv. sec. 21.

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and difficult. Here, however, I am to insist only on the knowledge of the sun's motion, ascertained by that of the equinoxes and solstitial points. I appeal for the truth of what I advance, to the astronomer, the philosopher, and above all, to you, Sir, who have so well observed the tardy and painful progress of the human mind. How many ages ought we not to give to the study of the Heavens, before the motion of the sun could be so much as suspected? How many more ages must have elapsed, before they could ascertain the four intervals of his period? Thus, Sir, we must make the conclusion that I have already made*, that the invention of the sphere, those doctrines which are only to be discovered by study and reflection, and a long course of careful observation, belong to a science already established, and long since in a state of progressive improvement. This is not the work either of one man, or of one age; nor, indeed, could it be the work of the Chinese, previously to the time of Fohi: they were rude and barbarous; it was he who civilized them. It would be not a little strange, if he had learned astronomy from them; he who taught them the use of the first necessaries of life. We are unable to take up for a moment with a supposition so absurd; and therefore we come necessarily to this conclusion, that their first knowledge

of astronomy was of foreign growth *, and that Fohi, a stranger himself, introduced it into China. In this view, every thing becomes natural and intelligible: those branches of primitive knowledge, so extraordinary in an infant state of society; that inertness of mind in the character of the Chinese, almost incapable of activity and invention; that superstitious veneration for the knowledge, the genius, and pretended discoveries of their founder †; that paternal authority which constitutes the basis of the Chinese government; the image, on a large scale, of the domestic authority of Fohi: every thing, in fine, receives an easy and unconstrained interpretation. Ne-

* Father Pérennin has, in like manner, perceived, that the first knowledge of astronomy was imported into China.—Lettres Edif. tom. 21. p. 90.

See also Memoirs concerning the History of the Sciences in China, by the missionaries of Pekin; published in the year 1776. Father Ko, a missionary, born in China, says positively, that in the time of Yao, the empire was of small extent, and but thinly peopled, but that knowledge of every sort, and particularly astronomy, in a state too far advanced for an infant nation, had been introduced among them.—Page 232, 237, 239.

† Father Ko seems to have exiled Fohi into the fabulous ages, and considers Yao as the real founder of the Chinese empire. Supposing this to be the case, we have only to substitute the name of Yao instead of Fohi, and every thing I have said on the subject will be equally true. I print, however, in believing, that Fohi is the genuine source of Chinese learning, and that he instructed and governed them at the same time. 1st, Because tradition says so: 2dly, Because we have from him the famous *Koua*; the explanation of which forms the basis of the Y-king, the first of the five canonical books: 3dly, Because he has left behind him so great a veneration for his memory.

yet were a more commanding influence, a more durable empire, established by an individual, over the sentiments of his fellow men; an influence which has subsisted four thousand seven hundred years: and as the north appears drained of conquerors, it may possibly be without end, together with the empire itself, so powerful by its magnitude and wisdom. In spite of this long and uninterrupted memory of Fohi, he may have been nothing more than an ordinary man. It is circumstances rather than genius, that command and ensure success. No man is a prophet in his own country: if he is ambitious of the honour of altars, he will obtain it more easily in a foreign land. The most insignificant of our almanack makers, were he placed among a nation of savages, would appear to have a certain affinity with heaven; and he consequently would have it in his option to pass for a god, or be nothing more than a man divinely inspired. Fohi must have been endowed with an enlightened understanding, as well as upright and virtuous intentions; for he chose to pass neither for one nor the other. That sentiment of admiration which has preserved his memory for ages from falling into oblivion, was no doubt strong enough in its source to obtain him divine honours, had he desired them. I figure him to myself, upon his arrival in China, taking up his residence in a country thinly peopled, and in a state easily to admit new settlers. I

see the astonishment of the rustic natives, in presence of a civilized family, as they survey the conveniencies of social life. His knowledge of the arts, his acquaintance with astronomy, the fruit of the enlightened place of his nativity, begin to enlighten the country of his adoption. Admiration follows his steps; the inhabitants flock around him; cities arise; a community is formed; and a great empire commences its career. The wants of man lay the foundation of his dependence; but it is wisdom that produces obedience. Ah! Sir, after seeing so often wandering men collected by slavery, and so many empires take their rise in the miseries of war, it is not a little grateful to find a government whose origin is love.

When we compare the virtues of the Chinese with that spirit of peace which reigns in the monarchy, we perceive that this spirit ought to be referred back to their founder: it is nothing more than the influence of his virtue, and the result of an immurable respect in them. Among this people, whom Nature has formed patient, enamoured of repose from indolence, unsusceptible of that restlessness which converts change into a want, and which will support the yoke, provided it only varies, this respect has taken the deepest root. This docile race, incorporated by the wisdom of Fohi, have remained such

as he moulded them. Prince and people are equally commanded by this sentiment of respect, and equally under the dominion of habit. The empire began in a single family: it has extended its boundaries with the progress of time; but without losing a grain of its spirit, of its unity, of its submission. The Chinese are still the children of Fohi, from generation to generation, represented by the emperor. If this be a faithful picture, we will thence conclude, that the genius of the Chinese is at this day the same with that of their first legislator; that their astronomy is nothing but his; that he was a stranger; and that the knowledge of those times, considerably advanced (which seems to spring up with the monarchy) was brought by him from a country where it had been of long standing, and familiar to the natives. I should wish, Sir, that my ideas might coincide with yours. I submit them entirely to your judgment. I think you will have no difficulty to give up the Chinese, and perhaps the Chaldeans; concerning whom, I propose to address myself to you in the following letter; but I shall have occasion to muster all my resources, in order to speak in a becoming manner of the Indians; to assign them that place to which they are intitled in the history of the human mind, without detracting in any degree from the high nobility of your Bralmans, infinitely respectable by their antiquity;

quity; by the knowledge they have transmitted to posterity; and above all, by having you for their defender.

I am, with respect, &c.

SECOND LETTER TO M. DE VOLTAIRE.

[The Persians, Chaldeans, Indians.]

Paris, 13th August, 1776.

PERMIT me, Sir, to transport you to the extremity of the continent of Asia: not mountains nor deserts shall intercept our march. We have neither army nor baggage; no enemy to encounter; nor provisions, nor a retreat to secure. And since Sesostris lightly bade adieu to Egypt, his native country, accompanied by only three or four hundred thousand men, and made the conquest of China, gloriously terminating a small tour of three or four thousand leagues; ours is but a morning walk. It resembles that of this conqueror in another respect, that it was never performed but in idea, and in the imagination of Messrs. Huet and Mairan.

Between the Caspian Sea and the Persian Gulph, we find a nation, which, in point of antiquity, is at least equal to the Chinese; I mean the Persians. the

worshippers of fire and of the sun. This mode of worship is the seal of their antiquity; it is the most rational, as well as the most ancient, among the people who have misapprehended the creative and intelligent cause. I think I have demonstrated that the Persian empire, and the foundation of Persepolis, ascend to three thousand two hundred and nine years before Jesus Christ*. Diemschid, who built that city, entered it, and there established his empire, the very day when the sun passes into the constellation of the Ram. This day was made to begin the year; and it became the epoch of a period which includes the knowledge of the solar year of 365 days six hours. Here, then, we again find astronomy coeval with the origin of this empire. The astronomical incident which accompanies the foundation of Persepolis, supplied me with the proof of its antiquity. It is the prerogative of heaven to instruct the earth. You know, Sir, it is there we find the elements, and, indeed the perfection, of geography. History, in the same manner, may there find illustrations. Those ancient and durable records preserve certain facts, which may supply the deficiencies of tradition, and serve to connect the series of events. Observations, and astronomical conclusions, are at the same time the most authentic and the most ancient monuments of man's residence on earth.

* Hist. de l'Asie, Anc. page 354.

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There never was an infant people who consecrated the foundation of their first city by an observation of the celestial phenomena. I intreat you will admonish me, if I am imposing upon myself: but do you not perceive with me, a colony migrating from a country over-stocked with inhabitants, or a nation already informed and civilized, descending towards more temperate and fertile regions, and there acquiring a settlement, with all their arts and attainments in knowledge? We cannot doubt that such emigrations were more frequent at a period when the earth was less populous, and mankind were divided into families: a certain portion of the community detaching themselves from the rest, powerful in their numbers and union, easily chaced before them small scattered hordes without force, and incapable of resistance. Thus Diemschid and his people appear to have been strangers in Persia, as Fohi was in China.

If we proceed to Babylon, we shall find that the commencement of that empire is involved in the darkness of ages; but when the light of day appears, we are presented, two thousand five hundred years before our æra, with the reign of Evechous, the first of the kings named Chaldean. Babylon was without arts and without defence: it fell to the lot of the first occupant. The Chaldeans expelled the actual possessors; and I explain this historical fact by observing, that the first had the advantage of bodily strength

and intellectual cultivation; the two principal sources of power. Such was the effect of the knowledge which they introduced, that the people at large, as well as the country itself, exchanged their name for that of a college of priests, who were its depositaries. It is observable, that what made the strongest impression in this revolution, was the acquisition of that new knowledge by which the vanquished were enriched and aggrandized. The impressions which subsist through ages, must have taken a deep hold of the mind: the memory of the conqueror is long an object of our detestation. Alexander is still remembered with horror by the peaceable natives of the southern parts of Asia; and the modern tygers who descended from the deserts of Tartary, bringing along with them neither quadrants nor cross-staffs, instead of an epoch of beneficence and science, have left nothing among the lambs of the south but the memory of ruin and devastation. The sciences thus imported to Babylon, were there cultivated for a long time by a college of philosophical priests, resembling our academies in its object and utility. Their observations were continued without interruption till the fall of their empire, subverted by Alexander. We may judge, then, of the ancient state of learning in Chaldea, from the state of it at this time. Though Nature may deny, or be niggardly of genius to certain ages, still the knowledge already acquired will

main. We shall not always have a Dominique Cassini, a Buffon, a Clairaut, or a D'Alembert; but so long as the Academy of Sciences shall exist, the state of information will be the same, and the actual stock of knowledge be preserved. We see, however, that among the Chaldeans, the return of comets was rather a matter of opinion than principle. It is more than probable, that they made no observations whatever on those stars whose abrupt and unexpected appearance caused them to be mistaken for meteors. Hypparchus and Ptolomy, who ransacked the observations of the Chaldeans, would have quoted those of comets: Ptolomy does not so much as mention those bodies in his large work.

It remains to be explained how those stars, wholly different from the rest in their tail and rays, came to be annexed to the same class; how an appearance always of rather a short duration, and frequently of a few days only, which naturally presents nothing more than the idea of a casual existence and sudden dissolution, should, nevertheless, suggest the notion of a revolution and return. I speak to a man who is familiarly acquainted with the sciences, and above all, with the spirit of science, or the habit of philosophizing. Divest yourself for a moment of that genius which approximates with so much facility the most distant ideas; descend to the level of the Chaldeans, and consider whether you should ever have been able

to found upon the appearance of comets the principles of their return. I observe an immense interval between the phenomena and the conclusion. Allow me one observation more on this point. Upon the revival of the sciences in Europe, men read Seneca, who has transmitted to us the opinion which Apollonius Myndian adopted in Chaldea, of the perpetual motion and return of comets; still, however, the most distinguished astronomers, till the time of Tycho Brahe, continued to consider them in the class of meteors. Tycho was the first who revived the opinion of Apollonius; but in spite of the authority of that eminent philosopher, Hevelius the whole of his life, and Dominique Cassini in his early years, persisted in the idea that they were productions of air, or æther in motion. Such was the general opinion in the year 1652; and it was the opinion of no less a man than Dominique Cassini *. The public had in their hands, however, the works of the ancient, as well as those of the modern astronomers; science had acquired a considerable degree of improvement; and yet men were less advanced than the Chaldeans of former times. As one can not suppose that the Babylonish astronomy surpassed that of the times of which we are now speaking, it seems natural to infer, that that opinion of the Chaldeans belonged to an astronomy more highly cultivated than our own, about the mid-

* Memoires de l'Academie des Sciences, 1708—page 90.

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dle of the last century; at least it appears indisputable, that it was an opinion foreign to Babylon. M. Cassini observing, that the motion of comets was the same, and conformed to the same laws with that of the planets, became a convert to the opinion of Apollonius Myndian; but with all his genius, if he had not had Apollonius before him, probably the current of popular opinion might still have carried him along with it. And after all, men would pretend that the Chaldeans invented a hypothesis, which the great Cassini did not at first admit, though framed to his hands.

But, Sir, this is not all: the period of six hundred years, a period which was indeed preserved, but misunderstood at Babylon, will supply me with another argument of equal weight. It is evident they preserved it, since it is cited by Berosus, one of their historians: it is as evident they did not understand it, since they made no use of it for the regulation of time. It should seem, that they even took no notice of it in their books of astronomy, inasmuch as Hipparchus, who examined the Chaldean periods of motion in the stars, makes no mention of *this*. Hence we necessarily conclude, that it was not the result of their own labours. It was therefore transported among them; and those two facts, the knowledge of the period of six hundred years, and the return of comets, belonged to astronomy in an improved state, previous

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and foreign to the Chaldeans. And this is all that I have any intention to prove at present: meanwhile, let us proceed to the Indians.

This people are much better known, because they had better pretensions to the consideration of mankind. The Brahmans were the masters of Pythagoras, and the instructors of Greece, and, through them, of all Europe. It was impossible they should attract the wise men of all nations, without a superiority of merit proportioned to their reputation. Their philosophy is, in many instances, wise and sublime. Permit me to unite my admiration with yours, as we consider some of its branches.

First of all, I find the articles of the immortality of the soul, and the unity of God, which, for men left to the light of Nature, shew a very considerable progress in human knowledge. The Indians name the Supreme Being *Achar*, that is to say, stedfast, immoveable *. And in annalyzing this so simple a definition, perhaps we shall find it contains a very lofty idea of the Divinity. They had observed, that all bodies in motion yield to the action of a Superior Power. God, who is the Supreme Power, yields to no other: he must of necessity, then, be immoveable. We may perceive in it something still more profound: God is the origin of all things, and the cause of mo-

* Bernier, lib. iii.
Hist Gen. des Voy. tom. xxxviii. p. 227.

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tion: the reason of motion cannot consist in the motion itself; and the first cause of every thing in motion must be immoveable. You easily conceive, Sir, that it is not our intention to discuss, here, the principle of causation through all its intermediate steps; nor the intrinsic merit of these ideas: it is sufficient to my purpose, if it be admitted that they are extremely philosophical, and such as could never occur but among an enlightened people. I observe also, that it is to them we are indebted for the idea of a universal mind; of which philosophers have made so much use since, or perhaps so great an abuse. Göll, according to the Brahmans, has spun every thing out of his own substance. Creation is nothing but extraction and extension; and the final termination of all things, will be nothing but the resumption of that substance. They say that the Supreme Being resembles a spider, which produces or extracts its web from its own bowels, and re-absorbs it at pleasure. This disagreeable figure, a comparison but little worthy of its object, is undoubtedly only a familiar mode of expression; by which the master brings down his own ideas to the level of his pupil, before he raises him to the height of his principles. They subjoin, that there is no reality in our sensations; that the universe is nothing but an illusion, or a kind of dream; inasmuch as every thing that is the object of sight, is but one and the same thing, which

is God himself; just as all the numbers, 10, 20, 100, 1000, &c. consist only in the repetition of the same unit. These ideas are equally void of truth and solidity; but still they convey something sublime. It does not fall to the lot of every race of men, to deceive themselves in the same manner. Children draw lines upon the sand; but when it presents us with figures of geometry, we say, these are footsteps of man. Father Malbranche, who taught us that we see all things in God, was truly no other than an Hindoo of the seventeenth century. Plato * introduced into Greece this idea of unity, constantly added to itself: on this unity he has established his triangle, by which he explains the doctrine of generation; and he has given us nothing in his various works, but Indian ideas dressed in his own eloquence. It is pleasant enough to represent man and woman by two lines which meet in a point, and to require that these two beings should produce a third, as the complement of their existence; which, in order to be perfect, must be triangular. When the imagination dreams in this manner, reason sleeps; but still it is the sleep of reason, in an enlightened state. The Greeks, so eminently extolled, with all the powers of reasoning they possessed, would never have reached the height of these metaphysics, had they not been

* See the beautiful chapter of M. de Buffon, upon the thoughts and systems of Plato, Hist. Nat. tom. iii. in 12mo. page 108.

enriched

enriched by the spoils of the East, and if they had not had the good sense to graft their own philosophy on that of India.

This idea of generation, by a triangle, leads us back to the notions of the Indians upon universal reproduction. They imagine that the seed of animals, plants, and trees, are not created in succession; but that all of them, from the beginning of the world, are dispersed every where, and mixed in every thing; existing in the form of animals, plants, and trees; perfectly formed; but so small, as to elude the sight: they want only to be developed. What is this, but the system of Harvey?—I mean that of pre-existing germs. If this system is now abandoned by philosophers, it is, nevertheless, the work of that great man who demonstrated the circulation of the blood. The Indians may therefore justly boast of having entertained the same idea. They have my praise. But I will be bold to ask, how they came to couple conceits of so gross a kind, with conceits of deep thought and reflection?—why they should unite the playful trifling of mature age with that of the weakest infancy?—They value themselves not a little on account of their university, the most ancient in the world, and their books, still more ancient; but might not one regard them as heirs under age, left in the midst of books, which they cannot read, and who have placed their childish toys in the libraries of their fathers?

fathers?—I cannot help imagining that I perceive every where among them a degenerate species of philosophy; precepts, the meaning of which they have lost; physical truths couched in a figurative style, which makes them be mistaken for fables. The idea of two principles, is a doctrine of Persian theology; but it properly belongs to that of India: it exists, at this day, in the kingdom of Pegu*. Is it possible to dissemble from one's self, that this theological tenet contains a physical truth? Upon a very superficial survey of Nature, we there discover a state of warfare; men, animals, all are contending with, and destroying each other: plants, trees, fruits, extracted from the bosom of the earth by the hand of Nature, are cut down and destroyed by the same hand. If on one side, the gentle influences of spring, the season of love, the revival of vegetation, display a solicitude for the preservation of beings, and the reparation of their loss; on the other, we have volcanos bursting from the bowels of the world; storms, which sweep the regions of the atmosphere; frozen winds, which announce decay and ruin, and threaten death. Are these the presents of the same hand, and can they be regarded as all descending from the same source? It is, however, in all cases Nature that acts: she has energies that create; she has also energies that destroy. She has, then, two

* Hist. Gen. des Voy. in 12mo. tom. xxxvi. p. 201.

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principles in herself, which balance and contend with each other, without the destruction of either. Such is the state of things that presents itself to our observation, and the appearances which have given birth to the doctrine of two principles. Nature, that creates and preserves, is the organ of a beneficent God: that is Oromasdes, Osiris, the God who created us; a God who is the rewarder of virtue. Nature, which produces the cruel scourges of life, is subordinate to the God of Evil; to Arimanes, to Typhon, the enemy of Oromasdes, Osiris, and the patron of the wicked. But, Sir, we are in a condition to proceed farther than this superficial survey. The ancient state of science appears to have been pretty complete: astronomy, in the primitive ages, was cultivated in a degree sufficiently perfect; a fact which, I imagine, I have discovered; and, if I may be bold enough to add, demonstrated, to warrant us to give to those ancient times, physics in a more advanced stage of improvement. The arts and sciences, the offspring of the same parent, are nearly of the same age. As they grow up together, they mutually aid and strengthen each other. Thales, who said many fine things to the Greeks, which they did not understand, constructed the world of water. Anaxagoras, in another corner of Greece, adopted fire for his universal agent. Our modern naturalists make Nature less powerful, by assigning her four

elements. Their meaning is this, that the operations of chemistry, and the analysis of substances, always terminate in reducing every thing to those four principles of which they seem to be composed. Without being either Thales or Anaxagoras, I have taken the liberty to make a system of my own. There is not a man who reads a newspaper, who does not reform the state; nor is there so inconsiderable a naturalist who does not build a world. I have ventured to imagine that Nature has only two principles, distinguished by two great characters, fixity and volatility; that is to say, absolute rest and motion. I observe that, from water, which freezes and hardens with little difficulty, to mercury, which an extreme degree of cold can scarcely render solid and malleable, all bodies are capable of being liquefied by the application of a violent heat, or of becoming solid by being exposed to an extreme cold. I think I perceive that fire is the only substance essentially fluid, as well as the only principle by which all other substances may be reduced to the same state. I therefore consider the element of earth as a substance fixed, inert, and without motion; fire, on the contrary, as an element, active, light, and in its nature moveable. It is to its being combined with earth, it is to its property of inflammation, which appears to be the vital principle of motion, that we owe the waters that moisten and fertilize our fields, the air we breathe,

breathe, and the fluids which circulate in a thousand flexible canals, dispensing life and activity through our admirable and delicate frame. It is long since my first studies in chemistry inspired me with this idea. Certain celebrated chemists are not far from admitting that air and water are compound, and not elementary bodies. If nobody has yet demonstrated the fact, nobody has been able to prove the contrary. But though the efforts of improved chemistry should never be able to go beyond the four elements, and though these elements should be found to constitute the utmost limits of art, still it would not follow that my opinion is unfounded. Nature working on a great scale, executes operations which we shall never be able to imitate: she has a vast laboratory, and her means are in proportion: at the utmost, it would only follow, that in order to deprive air and water of their moveable and fluid qualities, in order to decompose and reduce them to two primitive elements, earth and fire, it would be necessary to work, like Nature, in those profound caverns which are under the vault of the earth, and to put in activity those immense fires which she conceals in her bosom, for the purpose of feeding her volcanoes. Be not afraid, Sir, that I proceed farther in the construction of the edifice: in that case, I should only compose a romance. It is enough that we have seen Nature in her outset: I have neither courage nor strength to follow her

through time and space. I have only to desire you will observe, that if the ancient naturalists have reduced, like myself, all substances to two elements, Nature, according to them, had in reality only two principles; principles contrary and hostile to each other—that of motion, and that of rest. Those physics, involved in metaphor, were misunderstood by the vulgar; and hence a system of physics became in their hands a system of theology. Do not imagine that I attribute to the Orientalists an idea which they did not entertain: you will find it in the philosophy of the Chinese: it reduces every thing to motion and rest: it admits two principles only—simple matter at rest, which is *in*; and motion, which modifies it, and produces *yang*. The five elements of the Chinese are composed only of those two principles*. We shall never obtain a proper acquaintance with Oriental science, but by collecting and comparing the various knowledge which was distributed among the different nations of the East; but I have little doubt, if ever we should be able to make such a collection as would warrant us to attempt one day to embody the whole, that the different members, when reunited, will form a Colossus. It seems to me more than probable, that things happened in this manner. Philosophers, after a long course of experience and inquiry, announced the existence of two principles

* Hist. Gen. des Voy. in 12mo. tom. xxiii. p. 88.

in Nature, which the people readily converted into two gods, who carry on a constant warfare on earth one to produce evil, the other to prevent it. When the wicked one is at rest, we enjoy that small portion of happiness which enables us to support life; when the good Being becomes exhausted by his beneficent efforts, calamities revive, misfortunes put virtue to the trial, and the people take refuge in this theology; while the wise man reposes in the idea of a one only and just God, and the testimony of a good conscience.

The system of metempsychosis, or the doctrine of the transmigration of souls, contains, in the same manner, a physical truth. All those systems of profane theology, are nothing but certain views of Nature, and their applications to morals. Nothing can be easier, than to convert a truth into an error. The ideas lose their true proportions in false conceptions; and as there are but few just understandings, there are a great many ridiculous applications. It is thus that the pure doctrine of the immortality of the soul, and of its future existence, produced, in wild and timid imaginations, the fear of spirits, and the belief of ghosts. The transmigration of souls does not appear to be an idea that would spontaneously present itself upon an inspection of things. The first time a man saw an individual of his own species expire, the cessation of motion would only suggest the notion of sleep. Even the continuance of this sleep would not

have undeceived him, if he had not perceived a disunion of parts, and the symptoms of destruction. At this frightful spectacle, one idea alone would occur to him even that of destruction, or the man's subjection to a necessary end, like all other beings, which die by thousands around him; like plants or trees cut down by the root, or falling, from decay. He might have observed that he possessed the power of producing beings of his own species, while Nature had that of destroying them by accident, or old age. He would then consider himself merely in the light of a traveller, who quits one stage to proceed to another, and who passes from infancy to youth, only to return back by decrepitude and death. Such is the philosophy of a man left to the light of Nature and reason. The pain of separation, and the regret he would feel for the melancholy loss he sustained, would continue the remembrance of it for some time; but his wants, his pleasures, his passions, would create a forgetfulness of it; and nothing could possibly give rise in his mind to the idea of a resuscitation and return to life. It was genius and experience that went beyond this point; and whilst the one, by a progress which it is not necessary for me to trace at present, rose to the conception of the unity of God, and the immortality of the soul; an observing mind saw all the different races of beings in rapid succession borne down, and swept away by the current of time. He would

observe,

observe, that Nature destroyed with one hand, while she produced with the other; and that she seemed to repair and re-construct herself from her own ruins. Thus the rivers which descend with a gentle motion, undermine the hills by insensible degrees, to form at a distance accessions of soil; or they roll down their waters in torrents, and scoop out the vallies, for the elevation of mountains. The vegetables, the leaves of trees, the trees themselves, fall and rot upon the ground, for the purpose of producing fresh vegetation. The animal lives upon these vegetables, or upon other animals which he destroys: their flesh forms his flesh: death becomes the nutriment of life: and when these deplorable remains are consigned to spontaneous destruction, or to the all-pervading force of Nature, she seems to raise from them new species, new beings, which grow out of one part, and immediately begin to feed upon the other. Men themselves seem to be withdrawn from the face of the earth, to make room for succeeding generations, and to afford materials for fresh productions. Philosophers have imagined that Nature is at all times, and every where, alive: they have confidently believed that matter is eternal, uncreated, and that its quantity is susceptible neither of increase nor of diminution; and that, since the beginning of things, it has been circulating from beings to beings, and from

one class of productions to another *. You observe, Sir, that the circulation of matter once established, that of minds or souls is nothing more than a natural enough application of the same principle.

In combining those observations, which were taken for facts, with the metaphysical idea of the soul's immortality, the people, or perhaps philosophers of little depth, less wisdom, but sufficiently bold, could not persuade themselves that souls were created in succession, or as occasion required; full of a certain idea of grandeur, of magnificence, and of justice, they fancied that God at once, and by one act, detached them from himself, in order that they might dwell constantly on earth; an abode of trial and probation, where they change only in respect of form and residence, while they pass through a series of alternate rewards and punishments. The people, whether it be that they are the authors of this system, or only adopted it, found it much more to their taste: they must have something that comes home to the senses. The bitterness of grief receives some alleviation from the idea, that separation by death is not final; that a beloved father, a faithful and affec-

* This system has been actually received among the Brahmans. According to Mr. Anquetil, they believe the world to be eternal; that matter is only variable in its form, and produces in succession all the different races of beings.—Zend. Avesta. tom. i. part i. p. 179.

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tionate wife, were present with us, animates us by their recollection, and felt joy and satisfaction from our regret. It is thus that a system too profound for ordinary capacities, has, however, been handed down to our own times. Its moral garb has preserved it from oblivion. The heart and affections have engraven it in the memory of men. It is perhaps necessary that philosophical ideas should become popular, and be converted into fables, in order to their being preserved through a long succession of ages.

I presume to hope, Sir, that you will be of the same opinion. Is it not a fixed principle, that things of an intellectual nature have been derived from those that are sensible? The operations of the intellect and of the understanding, are only known, and figuratively expressed, by an application of facts borrowed from the material world, from motion, and the reciprocal action of physical substance. Moral beings are nothing but these very beings stript of their peculiar properties, and reduced to their general qualities. It cannot be doubted, that were Nature better known, by setting aside the modifications of matter, and exhibiting the naked system of causes, we should see the different threads combined with and crossing each other, for the purpose of connecting facts in a chain, ramified and extended even to the great intelligent and productive cause: this would constitute general metaphysics. We have not, therefore, a

single

single idea, nor a system of metaphysics, that has not been borrowed from natural facts: and when I perceive an exact correspondence, and a necessary connection, between the system of the circulation of matter and the doctrine of the transmigration of souls, I am bold to conclude, that the one preceded and produced the other; and if a partiality for my own judgment does not mislead me, the illustrious philosopher of Ferney will adopt the same conclusion.

I shall not repeat here, Sir, what I have advanced in my book, upon the origin of astrology: I will only add, on the present occasion, a few reflections. The Indians pretend, that the life of man is written before-hand in the head of each child, by Brahma: those characters are indelible: neither Brahma, nor any one of the gods, can intercept, or prevent their effects. On the other hand, they say that the actions of men are written in the stars, and announced by the motions and aspects of those bodies. The missionaries conceive that the Indians here are in contradiction with themselves. If every thing has been fore-ordained by Brahma, what becomes of the irresistible influence of the stars?

In reality, however, there is no contradiction. The missionaries did not perceive, that these ideas are derived from materialism. From the moment every thing is bound in the link of a chain, and that one general and individual motion at once determines

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and coerces all beings, material as well as sensible, the physical and moral order follow one and the same law; the instant of the actions of men, as well as that of the celestial phenomena, are noted; and as they necessarily accompany each other, if the celestial phenomena are known in the future, the actions or events that are attached to them, will be known in the same manner. There would, indeed, be a contradiction, were it pretended that the stars are physical agents, capable of imparting certain influences; but there is none, if they be only regarded as the contingent signs of simultaneous effects. The Indians are not in condition to answer these objections, because they have lost the thread of their ideas, and the spirit of their own principles.

You see, Sir, the idea I have formed of the Indian philosophy. I respect it with you; and you will not accuse me of having assigned it either too much depth or extent. After pronouncing their encomium, you will indulge me in a little animadversion. This knowledge, so greatly advanced, and so admirable in many respects, could be founded in experiment only: this is even more necessary to build systems than to pull them down. I have never heard it said, that they make experiments at Benares. The Indians reckon five thousand veins in the human body; and yet they can know nothing of anatomy, since they do not allow of dissection. Their botany is that of the people

people of the country. They have not the smallest idea of chemistry. Their medicine, according to the usage of the first ages, consists in a collection of precepts in verse, which, that the subject may the more easily be retained, assist the memory by harmony and measure. The whole circle of their sciences is contained in the four *Beths*, which are their sacred books. It appears to me, that the Indians have been long nearly such as we were under the reign of Aristotle. Their books have the same fate which his writings have had: the commentators have darkened the text, by overcharging it with expositions and subtleties: they have respected above all, what nobody could understand: their labours embraced and seized every thing but that philosophical spirit which alone merited to be preserved. But the writings of Aristotle, with respect to us, were only an adoptive science. If I were to draw the conclusion, it would not be in favour of the Indians.

Let us open the *Shastah*, one of their four books: it commences with a most important truth, namely, that it is insanity in man to sound the depths of the divine essence. It pre-supposes much labour and inquiry, and that man has met with frequent discouragement, before his reason could reach this simple and true idea. Covetous as he is of knowledge, nothing but the inefficacy of his efforts can induce him to desist from its pursuit. We were not, by any means,

means, so far advanced in the last century, when Leibnitz, Bayle, Clark, wrangled about the origin of evil, free-will, the goodness and prescience of the Deity. If they had read the *Shastah*, they would not have attempted to sound any such metaphysical abyss. But, Sir, wherefore were not these men, the most brilliant geniuses of the age, who communicated so much light to the world, more enlightened themselves? The reason is, that the sun of true philosophy had not yet risen; a philosophy which is the result of all the sciences that were still uncultivated, and constitutes the full maturity of the human understanding. The mind remained long in a state of adolescence: perhaps we are still somewhat green; but reason begins to extend its dominion over all. Corneille and Racine were men of genius; they, however, never brought philosophy upon the stage: she reserved her first appearance there for the reign of their successor: she has painted men and manners in the *Essay upon General History*: the orator and the poet have spoken after you, the language of art, of science, and of reason. We must agree, Sir, that it is the progress of the arts and sciences that introduced the reign of philosophy; that philosophy necessarily supposes their existence; and from the nature of our ideas, we may determine the age of the human mind. But no one spoils his own work with his own hands. When a nation has passed the epoch of

of youth, its genius may fail, imagination may become extinct; but reason preserves its vigour, and continues during old age: we learn from you, that age deprives it of nothing. How old soever your Indians may be, they live, they read their books; they pursue their studies in the same university for these forty or fifty centuries past. Why then should they pass from reason to insanity? Why, after the fine leading idea of their *Shastah*, have they subjoined so many fables, which disfigure this beautiful work? What means, for example, that profane Trinity, if I may be allowed the expression; those three deities, inferior and subordinate to the Supreme Being, and so often incarnate, under the meanest and most despicable forms? What are we to understand by that crowd of intermediate powers who inhabit the heavens, the earth, and the shades? Can we suppose that a people, once enlightened, may fall back from the unity of God to polytheism? No: it is ignorance which succeeds to knowledge; it is a strange composition of error and of truth. We may easily discern in those fables, a mode of worship pure in its source, but corrupted in its descent. The three inferior deities are the ministers of the One Supreme God: Brahma, the greatest, and first favourite of living beings, is the one by whom he created the world: it is by the agency of the second that he preserves it; and he will employ the third for the

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destruction of all things. Those three deities, then, are nothing but three acts, and the three most characteristic of the divine power: they are so many attributes of the Supreme Being, which ignorance has separated for the purpose of their personification. I pray you observe, Sir, that among the Indians, this is not the belief of the people alone, but also of the Brahmans, the depositaries of religion and science. If we cannot with-hold our admiration from those metaphysics, and from the above refined theology, at the same time it must be confessed, that they who clothed it in such fabulous absurdities, were any thing but philosophers. I might apply the same reasoning to those intelligences, intermediate and superior to man, with which the Asiatics have animated and peopled the universe.

I perceive, that at all times man has been disposed to compare every species of being with himself. He easily distinguished brute and immoveable matter from his own nature, always stirring and active: afterwards, when he observed matter in motion, that motion would naturally suggest to him the idea of life. It was in this manner that he came to bestow life and intelligence first on animals, then on trees, rivers, and fountains. But though man might believe that these beings were animated, he must, nevertheless, have felt that they were subordinate to him. The animals are subdued by his force, or by his ingenuity

genuity and address; the trees fall under his blows; and though the rivers seem to be of superior power, his intelligence enables him to divide them, and frequently to bring them into subjection. It is not easy to see how he should be led to the idea of the divinity of rivers, trees, &c. if it was not, in like manner, an abuse, a transformation of certain philosophical ideas. All these intermediate beings, which, according to Plato and the Indians, compose one continued chain, from man even to the Supreme Being, are no other than particular or secondary causes, which unite man to the first cause, and through the medium of which, it acts upon him. These causes, when taught in a figurative and metaphorical style, became in the imaginations of the vulgar, living and powerful beings; in the same manner as the passions, personified in the works of the poets, have been taken for divinities. But this species of metamorphosis could not happen all at once; it implies a degree of ignorance that is incompatible with the spirit of invention. Let us observe once more, that there is a certain necessary relation between men of the same age. How great, Sir, soever your superiority may be, and the interval by which we are separated, had we been born twenty centuries ago, there would have been between us the same interval only; you would have been less informed; I would have been still more ignorant. But if Nature had chosen to

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place you equally high, if she had allowed you to make Alzire, and the Henriad, she would have formed me capable of admiring them. Let us then, Sir, agree in admitting, that the men who could change in this manner the beautiful system of second causes; who could personify these causes, and people the universe with chimerical beings; that the men who could make so gross and literal an interpretation of the inventions of the poets, those charming pictures, these ingenious emblems of Venus, of the Graces, of Love, &c. did not belong to the age that gave them birth. When poetry was invented, it became from that moment a language; a language which men spoke for the purpose of being understood. We must suppose that this language was forgotten, consequently that ages had elapsed, and that a race of ignorant men had succeeded to a race enlightened and informed. We come then to this conclusion, that the Indians are strangers to themselves; in one word, and that we may come nearer to each other, that the Brahmans are not Indians. These last agree in this: they say that the Brahmans came from the North. Here, then, we have the tradition, as well as the proof, of an emigration. But, in order to be consistent, and do homage to the science deposited in the hands of the Brahmans, I believe that these Brahmans were merely the disciples of the great men who laid the foundations of that knowledge. The

sun dispenses his light to the planets, those opaque bodies; they become luminous, and in his absence enlighten the world; but that light, far removed from its source, is enfeebled by distance, and by its diminished quantity. As the light of the Brahmans is equally borrowed, its brightness diminishes as it is reflected from father to son. With every generation, the Brahmans have suffered a certain portion of their stock of learning to escape them, or at least of the knowledge of their own principles.

I shall conclude by a few reflections on the Sanscrit, on that ancient and learned language, which has been fixed by eighteen dictionaries, and an infinity of grammars. It derives its name from the synthetic method which prevails in it; for *Samscrit*, which appears to be the true Indian word, signifies synthetic, or compound. These grammars, as they pretend, are the masterpiece of the human understanding. The authors have there reduced, by an analysis, the richest language in the world to a small number of primitive elements, which may be regarded as the essence of the language. Each simple idea is expressed by one of those primitive elements, modified and circumstantiated by the secondary elements which always accompany it*. This, so rich and beautiful a language, in which the four sacred books were written, is entirely unknown and unintelligible

* Let. Edif. et Curieuses, tom. xxvi. p. 222.

to the Indians: it is wholly different from the ordinary and popular language: it is studied by the Brahmans alone, and among them, there is but a small number who can flatter themselves that they understand it. Now, Sir, I would ask, how it can happen that a primitive and common language may be lost among a people, and come to be reserved exclusively for a certain description of men? Languages, no doubt, undergo changes, in their progress towards perfection; but sooner or later they are fixed and ascertained by standard books. It is thus that you have completed what Racine and Bossuet began. But this moment is long over among the Indians: they have books which they preserve, as the world will preserve yours. It is not the defects of this language which destroyed the use of it: it is so harmonious, so copious, and so superior, say they, to the ordinary language! This species of dereliction is not in the nature of man: one never forgets the language in which he received the caresses of his mother, and in which he made love; the language which was the vehicle of our first ideas, and in which we expressed those of our own creation. The language which recalls certain moments of happiness, of pleasure, and of glory, is fortified by their remembrance, which is the consolation of old age: these deep and lasting impressions descend from a father to his children, and from generation to generation. At

Rome, the Greek was the learned language, because it contained the admirable works of Demosthenes, of Sophocles, and the ideas of Plato. The poems of Virgil, the comedies of Terence, and the eloquence of Cicero, have assigned among us, and for a long period, the same rank to the Latin language. But, Sir, let me ask, if a stranger arrived in Paris were to see us studying and reading the Latin, perfectly different from the popular language, and absolutely unknown to three-fourths of the kingdom, would he not have a right to conclude that it is the language of a people who no longer exist, and of a people of greater antiquity than the French? Wherefore should we not have an equal right to draw, in respect of the Indians, the same conclusion from the *Sanscrit*? The hieroglyphics of the Egyptians, which formed a sacred language reserved for the priests, and unknown to the people, detract nothing from the solidity of this argument. The hieroglyphics are the first step towards the art of writing. If the principles of science presented themselves at the same time, and were marked or written by these signs, the care of preserving the principles would equally preserve the signs. Superstition, and other human motives, would restrain the priests from translating them, even when the progress of improvement had introduced more concise and convenient signs for expressing their ideas. But this is not the

case with the *Sanscrit:* it is a language spoken, written, and with alphabetical characters; it is a language in a high state of perfection, and which differs in no respect from the ordinary language but in its perfection. The *Sanscrit* has not been preserved in all its integrity: several passages of the sacred books are unintelligible; no dictionary is sufficient to explain them; and the reason is, that those dictionaries are to be considered in some sort as modern. We see clearly, then, that the Brahmans, issuing from a country where this language was in use, and where these books had been committed to writing, brought them along with them to India. Whether it was superstition and mystery on their part, or whether it was rather resistance on the part of the Indians, this language has only been preserved among the first, and in the way of tradition. When, at the end of a certain period, it was judged proper to compile dictionaries for its better preservation, the knowledge of it was already lost in a certain degree; and the original and sacred books have remained in all their obscurity for the exercise and amusement of the commentators.

I shall not repeat here, what I have stated respecting the astronomy of the Indians: I shall only observe in a few words, that M. Le Gentil found among them learned methods and calculations. I found myself, among the papers of the late M. de

Lisle, two Indian manuscripts sent home by the missionaries, which contain astronomical tables, different from those of M. Le Gentil.. Their variety of methods, indicates the richness of science. But a people who make the earth a plain; who imagine a mountain in the middle, to intercept the light of the sun during the night; who create expressly two dragons, one red and the other black, to eclipse the sun and the moon; a people who place the moon at a greater distance than the sun, and rests the earth upon a mountain of gold; the inventor of these absurdities cannot be the author of the learned methods we so much admire. A people in possession of so many beautiful systems of physics, which could only have been founded in experiment and reflection; a people whose theology implies the purest notions of God, shew themselves incapable of having discovered these ideas by means of their accumulated fables. It is plain, they never could rise to that elevated point, since the only motion they seem to have had, has been downwards from it. A people among whom we find a rich and copious language confined to a few individuals; a language in which are deposited the treasures of philosophy and science; a stranger to this language is not the author of the riches it contains: they have preserved them, but they also received them.

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I have reserved, Sir, for the last, that proof which only occurred to me some time ago: it seems to me to carry the greatest weight. I am consequently strongly of opinion, that the Brahmans are not of Indian extraction: they brought into India the language and science of a foreign country. Without being inventors themselves, they were superior in knowledge to all the nations of the world, and had a perfect title to celebrity. It was with reason that the sages of Greece went to imbibe the principles of sound philosophy at their source. The Brahmans, in whose hands that ancient philosophy was deposited, communicated it to us, and laid the foundation of all the knowledge we possess: they are our masters; and, to sum up the whole in one word, they are worthy of your admiration and of your praise.

I am, with respect, &c.

THIRD LETTER TO M. DE VOLTAIRE.

[Resemblance between the Chinese, the Chaldeans, the Indians, and the Ancient People, in Traditions, Usages, Philosophy, and Religion.]

Paris, 24th August, 1776.

THESE three people, Sir, the Chinese, Chaldeans, and Indians, whom we have just been considering, have with each other a certain conformity of character. The Chinese and the Chaldeans have observed the heavens for thousands of years with equal assiduity, and with as little success the one as the other. The Indians have been no less assiduous, but to no manner of effect, to preserve without improvement, in peace, and in an idle and contemplative life, certain philosophical opinions disfigured and corrupted. Contemplation, which among the Indians rises to a species of ecstasy, is in that country the result of a mind without energy, and its duration is prolonged by habits of indolence. To be always contemplating, or never thinking, comes very much to the same thing. Constancy in the pursuit of certain occupations, is, in like manner, only indolence in disguise: they do always the same thing, because

they know the manner of doing it; and it would cost them trouble to do otherwise. This is the effect of the influence of climate. Between the 36° of latitude and the Tropic, long and intense heats invite to sleep and inaction. If the wants of life call to labour, indolence leads back to repose. The mind in captivity, subdued by an effeminate body, bends and conforms itself to its habits. Beyond the Tropic, a more ardent sun always over head, adds to those causes a greater degree of intensity. The relaxation of every spring is progressive, even to the line; and if an aptitude to labour, the thirst of conquest, perhaps the genius of art and science, but above all, trouble and commotion, descended from the North, peace finds her quiet abodes between the Tropics, and indolence has her throne under the Equator.

I confess, Sir, we ought not to be astonished at this resemblance. But these people have among themselves, and with other nations, conformities more remarkable and singular. Let us follow them: it is a gallery of pictures, where I propose to lead you about for a moment. We converse. You will excuse me, if I enter into some detail. I will begin by libations.

Libations of wine, oil, and milk, were in use among the Romans: they offered them to the gods on different occasions, but above all, during the time of a repast: it was the homage of a certain part of

the good things they received from them. I do not know that our antiquaries have either sought or found the origin of this usage. In China, the master of the feast orders wine to be brought in, which he pours upon the ground as he raises his eyes to heaven, to acknowledge that we owe every thing to the divine favour *. When the Tartars meet to make merry, they throw some drops of liquor on the statues of their gods; then a domestic pours some of it three times towards the south, in honour of fire; towards the east and west, in honour of air and water; and towards the north, in honour of the dead †. Libations, therefore, are established among the Chinese, and among the Tartars. I can easily conceive that they might find their way from one people to another. But I should be glad to be informed, why they obtained among the Greeks and Romans, who imbibed every thing, their worship as well as their philosophy, in the western parts of Asia? Will it be said, that this mode of honouring the gods is so very natural, that it is essentially interwoven with their worship? May we not thence infer, that this custom belonged to the west of Asia, as well as to China? Perhaps it subsists still among the Indians; but of this we are ignorant, since the law of the Brahmans prohibits their eating with Europeans.

* Lett. Edif. tom. xxi. p. 363.

† Ibid. tom. xxvi. p. 449.

For what reason, Sir, do we find among the institutions of all ancient nations, the saturnalian festivals; that commemoration of a period when men were equal and happy; that chimerical picture of the golden age, of a state of innocence; a picture which owes its effect in no degree to the art of contrast, but where virtue displays itself alone in a pure and gentle light, without the mixture of the lightest shade?

Why is the effusion of water the basis of almost all the ancient festivals? Whence those ideas of a deluge; of some universal convulsion? Whence those festivals, which are evidently periodical commemorations?—The Chaldeans have the history of their Xisustrus, which is no other than that of Noah, somewhat altered. The Egyptians used to say, that Mercury engraved the principles of the sciences on pillars that could resist the deluge *. The Chinese have, in like manner, their *Pegrun*, a mortal beloved by the gods, who saved himself in a bark from the general inundation †. The Indians tell us, that, about twenty-one thousand years ago, the sea covered and inundated the whole earth, with the exception of one mountain, towards the north. One woman with seven men withdrew to it. The Indians still preserve the names of those seven men. They saved in the

* Syncelle. p. 40.

† Kempfer. Hist. du Jap. lib. iii. c. 3.

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same manner, two animals of each species, and two individuals of each plant, to the number of eighteen hundred thousand. The deluge lasted a hundred and twenty years, seven months, and five days. At the end of that period all the beings disembarked, and re-peopled the earth. As the woman could cohabit but with one man, the other six remained at the top of the mountain, where they consecrated their days to piety and celibacy, which, in their circumstances, had no great merit*. They add, speaking of their god *Vichnou*, metamorphosed into a fish, that it happened at the time of the deluge, when this god steered the vessel which preserved the human race †. This bark, which had the merit of saving mankind, is still found in Edda, in the northern parts of the earth. The giant *Ymus* having been killed, there ran such a quantity of blood from his wounds, that the human race sunk in it, and were destroyed, except *Belgemor*, who, with his wife, saved himself in a canoe.

There is a great difference, Sir, between the remembrance of the golden age and that of the deluge. The one presents but a picture which the imagination might embellish; which it might even create; the other has the appearance of a historical fact preserved by tradition. It is said, that the golden

* Trans. Philos. ann. 1701, No. 268.

† Lett. Edif. tom. xxiii. p. 97.

age is the offspring of poetical fiction, the chimera of men afflicted by the evils of life; but I cannot view it as a mere fancy, or dream. I perceive in it the embellishments of the imagination; but I conceive I discern in it also some reality at bottom. It is the object of the wishes and regret of mankind. Regret necessarily supposes a loss, a change, the destruction of some ancient state of things. There is no such thing as change with respect to the species: man reproduces as he destroys himself: all the seasons of life exist at the same time, in respect of the species. What, then, has produced this regret, and those lively portraits? The slightest attention to ourselves will inform us. There happens to the species, in the course of successive generations, what happens to the individual in the progress of his years and ideas. Who does not regret the period of youth? Who does not cherish the smiling imagery it has left in the memory? It is the age of fond illusions; the period when Nature, in her vigour, makes the deepest impressions; but when, at the same time, she paints in colours the most soft and lovely: the house we inhabited was so pleasant, the men so good, friends so constant, the women so sincere and interesting: that house was surrounded by a pure air; the sun was ardent as friendship; the heavens were serene as the recesses of the heart. Such is the golden age: every man has had his own. If the poets were old men,

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the golden age would be nothing but the image of youth, always the object of regret: but the season of poetry is that of the golden age itself: in order to paint Nature around us, it is necessary that inwardly she should have all her force and energy. It is in the plenitude of her powers that she admits of creation. The Being alone who is infinite, can always create, because he is always young. But, Sir, youth cannot be said to regret itself: the poet in the prime of life, sings his enjoyments, his pleasures, his pains, which are still pleasures: if he regrets an inconstant mistress, it is with a fire that renders him worthy of one more faithful: hope gives animation to all his images: regret is reserved for that age when he shall sing no more. The golden age, therefore, is not the representation of youth passed and gone, neither is it a mere fancy-picture. Such, according to me, is the history of its origin.

Men multiplied faster in ancient times than they do now; they lived with greater difficulty, because the culture of the soil was less improved: hence the necessity of sending colonies abroad, of chacing from the national habitation numerous swarms, as the bees do still in our own days. Men, as population increased, drew closer together; their meeting gave birth to war; and destruction superseded the troublesome usage of colonies. The bees are the only people who have retained it, because they have not

yet imagined the excellent remedy of self-destruction at home, in order to avoid the listlessness of life in a foreign country. One of those human swarms proceeded towards India. The youth banished from their country, did not quit it without pain: they found a more beautiful sky, and a land of greater fertility; but it was not their native soil. It was no longer those skies whose rays first struck their sight; it was no longer that land where they began to live; that land which witnessed a father's care, and the innocent sports of childhood; where they received the first impressions of pleasure and happiness. The eye turned itself constantly towards that land of their nativity; and when the youth had produced a new generation, they spake of it to their children; they painted, they exaggerated to them, no doubt, the value of all they had lost. A taste for the marvellous had no occasion to add any thing to the pictures they drew. Early youth is truly the age of innocence. Besides, those pictures traced in the memory are seen, as it were, at a distance. All the strokes of the pencil are softened by the perspective of the piece. Vice appears less odious, seen through this veil; the ills of life are forgotten, and virtue, alone worthy of a place in the memory of man, preserves its charms in all their purity and lustre. You will easily believe, Sir, that the old men who made those recitals did not omit to add, that in the land of their regret,

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the fruits were more beautiful, and of a superior quality; food more succulent and delicate; that the salubrity of the air in that climate rendered the bodies of men more healthful and robust: there they were never sick. In a word, that ancient land had all the advantage that the wax has over the wane of life, and youth over decrepitude.

Those images, though of the highest antiquity, have been preserved by the charms of poetry, and above all, by the influence of education; by the tuition of the aged, who instilled those things into the minds of their children. Tradition and fact are liable to be somewhat changed by transmission; but they are more deeply engraven, and perhaps preserve their impressions better, than by writing: the ear is less apt to be distracted than the eye: conversation takes complete possession of the mind. The recitals of their fathers, and the facts that had been laid up in their memory, made a part of the family inheritance. It was faithfully collected, since it has descended even to us.

The golden age, then, that enchanting fable, is nothing but the remembrance of a native country abandoned, but always the object of affection. The nations where this remembrance still exists, have been transplanted: they are colonies of a more ancient people. Such is the amount of what I ought to conclude in this place. I have dwelt long on this primi-

primitive picture; but the golden age is amusing: one would be glad to return to it, and we are pleased with its image.

If this fable be partly the work of the imagination, the idea of the deluge, such as we have found it in the different nations, is the tradition of an historical fact. Is the idea, then, of some universal catastrophe, natural? Might it originate in the human mind otherwise than as the effect of a great calamity? Man learns nothing but by experience: from seeing another die, he acquired the idea that he himself should die one day; but from seeing births every where around him, he inferred the perpetuity of the species. If the majesty of the thunder bursting from the bosom of dismal clouds; if the fury of the tempest, the rain falling in torrents, which threaten to inundate the earth, might announce the vengeance of Heaven, inspire terror, and create a dread of the dissolution of Nature, that terror vanished with the storm: it is after the evil day is passed, it is from experience of its fatal effects, that men think of establishing commemorations. They never could entertain the idea of perpetuating the memory of a thing that never happened. Those traditions, different in form, but similar in substance, which present us with the same event every where various, but every where preserved; this universal consent of mankind, appears to me a strong proof of the truth of the fact.

You see, Sir, that we proceed according to the legitimate mode of philosophical investigation: you have only to contend with human weapons. I do not appeal to the Scriptures, because they command us to believe; and it is my business here to demonstrate, or at least to persuade.

A calamity of such magnitude must have impressed terror on every mind: they naturally dreaded its return. When the sciences came to be introduced; when they observed that the seasons depended upon the motions of the heavenly bodies; that different inclemencies of the air returned the same, after a revolution of the sun; natural astrology fancied it could predict them. They saw with alarm, that since those inclemencies were periodical, the calamity of the deluge might be so likewise. The human race, upon their dispersion, had not all, like the Hebrews, preserved the memory of the covenant God had made with them, nor the remembrance of that sign of peace he had placed in the clouds. It was this alarm that gave birth to those periods, those great and terrible years of the ancients, which were to bring back the flood, the conflagration of the earth, and universal destruction. The grand conjunction of the planets was to form that epoch. This was the belief of the whole of Asia. But, Sir, let us pause a moment, and enumerate all the elements of this idea. In the first place, it necessarily implies a knowledge

of

of the fact; and, secondly, a certain number of observations on the agreement of the seasons with the motion of the heavenly bodies: it implies, farther, a certain progress in science, to enable them to announce, right or wrong, the return of the seasons, and their inclemencies: they must also have attained to the idea, that we are equally warranted to include in a certain period a calamity more fatal, though the lapse of ages ought to lead them to consider it as infinitely rare. In short, they must have at last ended in agreeing to fix the epoch of it to the moment of the conjunction of the planets. This process of the mind, this succession of ideas, appears to me too uniform, for us to suppose that men dispersed, and left to themselves and the caprice of the imagination, should have pursued it with equal success. Those marks of agreement and resemblance, appear to me those of consanguinity. I think I there perceive the arms and livery of the same family.

The worship of mountains is not less extraordinary. How came men to agree in offering sacrifice in high places? How came this habit to be so deeply rooted, that Moses was obliged expressly to prohibit it to the Hebrews? Wherefore do the Indians hold in the most profound veneration Mount *Pir-pen-jal*, one of the mountains of Caucasus, on the frontiers of the Lesser Tibet? It is there they go, in performing the duty of pilgrimage.—The Chinese

have the same respect for a mountain of Tartary, named Chang-pe-Chang, from which they boast of having derived their origin. You will allow, Sir, that there is something singular in this love of mankind for mountains. I shall not undertake to investigate its cause. The plains must have been long humid and marshy: the first settlements, perhaps the first kingdoms, were upon the tops of mountains. The air in that situation is more cold and salubrious; and if the earth was one day scorched by a more formidable degree of heat, the mountains would be inhabitable before the plains. Besides, I should be tempted to say, that this love resembles the love of our country. We can easily believe, that men descended from the mountains of Tartary, and from the highest parts of the globe, to dwell in the south of Asia, would wish, by sacrificing in high places, to preserve the memory of the ancient place of their abode. This usage might also have had for its object, to anticipate the rising of the stars, which they worshipped, or perhaps to carry their homage nearer to Heaven, the residence of the Supreme Being. But here we have no want of the cause; and I content myself with observing, that this unity of love, of respect, and of worship, is a very remarkable conformity.

I hope you will excuse me, Sir, if I entertain you with fables; I cannot refrain from citing that of the

giants.

giants. Those giants, and their battles with the gods, are an ancient story of Greek and Roman mythology. When the gods, in alarm, concealed themselves under the forms of different animals, they sought an asylum in Egypt. This circumstance unveils the origin of the tale. It was there that the Greeks found it; it was, therefore, already known in that country. We see in the same manner, in India, the walls of their temples covered with sculptures, where they have represented the battles of the giants with the gods *. The Indians tell us, that in the beginning of their history, the men were of a gigantic stature †. The Siamese relate the same thing ‖. According to the Indians, when the gods and the giants turned round in the sea the famous mountain of Meroua, prodigious things issued out of it; but the most perfect of all, was the female *Kehoumi*, who dazzled all the gods by her beauty, and who, with common consent, was given to *Vichnou*. Here is the marriage of Vulcan, and the fable of Venus, adorned by the Greeks. Those giants appear again, giving battle to the gods, in the frozen regions of the North. If this story has been generally classed with fables, and confounded with the childish tales with which old age amuses infancy, philosophy ought not to be ashamed to investigate the origin of fables: they

* Lett. Edif. tom. xxiv. p. 292.
† Ibid. tom. x. p. 33.
‖ Hist. des Voy. tom. xxxiv. p. 339.

 involve

involve the ancient history of mankind. I will not pretend to estimate the power of Nature; but as her resources are exceedingly great, we risk less by extending them, than by giving them limits. The existence of giants is not a chimera: we have seen individuals of from seven to eight feet: sacred as well as profane history, takes notice of men of an extraordinary size. Tombs have been opened, and skeletons measured, which give us the fullest evidences of those prodigies. But what Nature produces in the way of prodigy, and by extraordinary efforts, in certain climates, she may have operated in other times and in other places, by the pure and simple exercise of her ordinary powers. When I observe that all things that exist are subjected by the Supreme Being to general laws; that they are all devoted to death; that they all pass from increase to a diminution of their force; I conceive that the universe, considered as one great being; that Nature, which is the sum of all beings, and the re-union of all their faculties, may itself be subject to decay. I see that the children of old men are small and weakly; and though Nature may not yet be old, she has been younger; and perhaps it is not ridiculous to presume, that in her spring, and in the energy of her strength, she was able to produce men of a stronger and better frame,—do not mistake me, I entreat you, for that fool, who admitting, as I do here, a progressive diminution

of

of the size of men, measured their height by their antiquity, and found that Adam must have been a hundred cubits tall. Let us admit for a moment, Sir, the idea of M. de Buffon. If the earth has cooled down in its temperature; if she experienced formerly a much intenser heat; all the climates of the globe have experienced in succession the actual heat of the torrid zone, and its influence on organized bodies. You see, that this region is the habitation of the largest species. If the elephant, which no longer procreates in these climates, was formerly produced, and has lived (and we can have no doubt of the fact) under high latitudes, it was because a favourable temperature permitted him to live and perpetuate his species in those regions. We see that, in the North, animals similar to those of our own climates, are of a smaller growth. That whiteness, which is there occasioned by the cold, makes their natural colours disappear. The race of Laplanders is evidently in a degenerate state: their diminutive size leads to the belief, that cold mars and spoils the breed of the human race.

I foresee an objection you are ready to make. Men, you will say, ought then to be taller and stronger under the torrid zone. But let us observe, Sir, that Nature in all things has a mean term, in which consists the perfection of her works. The causes the most favourable to propagation, if you

increase their intensity, come to have a contrary effect. To render the human constitution perfect, a mean degree of heat is necessary, nearly equal, perhaps, to what we enjoy in these climates, which, for this reason, have been named temperate. This is a proof that men were not originally produced under the Equator: they would otherwise have participated in the advantage of climate, and its larger productions. If the height of men's stature does not sensibly diminish, it is because they anticipated its degeneracy in descending towards the Equator, and pursuing the heat; thus compensating the loss of central emanations by the rays of a more ardent sun; but above all, because man opposed his industry to the inclemencies of Nature, which besieges him on all sides, and seeks to alter his condition. He contrived to make himself clothes, and construct houses, which repel the severity of heat and cold; and where in a temperature almost always the same, he lives without change; though, in the course of a year, every thing changes around him.—The whole of these observations, Sir, are perhaps nothing better than a philosophical romance. You will pardon me if I have amused myself in writing them; and you will agree with me in thinking, that they are sufficient to prove that the idea of a race of giants is by no means ridiculous. I confess that these observations would not give us a right to imagine such a race, if the traditions

ditions of all ancient nations did not concur in regarding it as their original ancestry. Fear may make us sometimes mistake in the night a dwarf for a giant; but I do not conceive how the panic terrors of an individual could produce such an effect on a whole people. I do not see in what way, from a few isolated examples, they should be led to the idea of a similar race of men. I cannot imagine the necessity of any such creation; and it seems to me more natural, more probable indeed, to believe that this idea is a tradition that has been handed down to us, and that it has its source in historical fact. But were the existence of giants as evidently fabulous as their battles with the gods, I should still say that this fable, which is disseminated in Egypt, in all Asia, as well as the north of Europe, presents a very remarkable conformity between all the inhabitants of that large portion of the globe. I have no difficulty in believing that it proves a sort of consanguinity, or family-connection, among those people. Two men with minds of a similar cast, contemplating the same object, might separately conceive the same idea, or attain to the same truth; but were two children to relate to me in the morning a dream equally whimsical, and equally probable in its principal circumstances, I should find great difficulty to persuade myself that this dream was not a tale of their nurse.

Before

Before we quit those ancient times, I have one similarity still to submit to your consideration. You know, Sir, the history of that celebrated island of which Plato has preserved us the tradition, with a very interesting description. There issued from it an innumerable multitude of people, who, according to the manner of speaking in those times, invaded the earth, when the earth, in fact, was only a small part of the known world. That island was swallowed up by the sea, disappeared, and many learned men of the present day doubt if it ever existed. But they will permit me to inquire, how the Chinese came to have, in the same manner, the tradition of an island immerged in the sea? The monk Indicopleustes * has made a collection of Asiatic traditions. I would ask, why those Orientalists say that the earth which we inhabit is surrounded by the ocean; that beyond this ocean there is another earth, which touches the walls of Heaven? It was in that earth where man was created, and where was situated the terrestrial paradise. At the time of the deluge, Noah was carried by the ark into this earth, which his posterity presently inhabits. One may perceive that the Asiatic christians mixed facts of sacred history with profane traditions. The modern Mahometans and Asiatics pretend likewise, that the earth is encompassed

* Collec. nova Patrum, tom. ii.

by

by a high mountain, behind which the stars seek concealment: they add, that beyond that mountain there is another continent*. All those traditions are actually the same with that of the Atlantic Island; and I should be glad to know, why from Athens even to Pekin, for more than thirty centuries, we find the idea preserved, of an island swallowed up in the sea; of a continent separated by the seas, from whence men passed into *this?* I shall not examine whether this belief refers to an historical fact; but as I find it in all nations and in all times, I must regard it likewise as a family title.

The religion of Asia will present us with the same coincidences: you will find it every where with the same spirit and character. The Siamese have their angels, who preside over the stars, over the earth, cities, mountains, winds, and rain†. The Persians had theirs also, who presided over the months and days of the year‡. The monk Indicopleustes, who has reported to us, with equal simplicity and ignorance, the ideas of the Asiatics, says, that the Chaldeans, observing the stars to rise and set alternately, conceived that they were carried along with the heavens, because they were ignorant that the stars are conducted by angels¶. The Chinese

* Herbelot, Biblioth. Orient. p 230.

† Hist. Gen. des Voy. in 12mo tom. xxxiv. p 336.

‡ Hyde, de Rel. Vet. Pers.

¶ Collect. nova Pat. tom. ii. p. 161.

have,

have, in like manner, their angels, or spirits, who preside over the four seasons*. These spirits have been named *Genii, Dives, Periz, Fees:* the belief of them prevails, at this day, over all Asia. And their wonderful histories, which are pleasing to the imagination, have obtained such an ascendancy over the minds of men, that after having been preserved for so many ages in Asia, and translated into the languages of Europe, they amuse infancy, and those who at riper years still retain somewhat of the same period. But those intelligences are no other than the beings which compose Plato's chain: they are the secondary and particular causes of the philosopher, and constitute a branch of the system of a universal mind; which admitting no other intelligence than Nature, nor God, than her productive energy, finds a portion of the Divinity in each particle of moving matter.

I observed, Sir, that the doctrine of the Metempsychosis is derived in the same manner from this system. This dogma is universal; it is a fundamental article in the religion of the Brahmans of India, and of the Talapoins of Siam†. This system was also that of Egypt. It was equally admitted among the Persians: the Parsis, who are the feeble remnant of that famous people, have a law, by which they are forbidden to eat animal food; a law fallen into disuse,

* Hyde, ibid. p. 217.

† Hist. Gen. des Voy. xxxiv. p. 336.

and

and which is only observed in the instance of the cow, which this people, almost extirpated, continue to respect as their ancestors respected it*. If we transported ourselves to Tartary and China, we should find that the worship of the great Lama, the priest of the god Fo, is founded in the doctrine of metempsychosis. The great Lama is a mortal being, in whom the god Fo continually resides. The priests explain those successive incarnations upon the principle of the transmigration of souls, of which *La* was the inventor. This divinity, which is named *Fo* in China, *La* in Tartary and Thibet, is represented by an idol with three heads†. You recollect, Sir, that all the Indian idols, as well as those of Siberia, have many arms and hands. Amida, the chief divinity of the Japanese, has three heads and forty hands, to represent, say they ‖, the trinity of persons, and the universality of operations. Do we not see here, on the one side, the Indian method of representing by all those busy hands, the *Divine* Omnipotence; on the other, a corruption of the Indian theology, which established three gods, inferior to the Supreme Being, by a personification of the three most distinguished acts of his power?—Kempfer concludes in this manner: that "*Amida*, or the *Xaca* of the Japanese, the *Fo* of the Chinese, the *Butta* of the Indians, the

* Hist. Gen. des Voy. xxxviii. p. 238.

† Ibid. tom. xxxv. p. 364.

‖ Ibid. tom. xl. p. 264.

Budhum

Bodhou of the island of Ceylon, the *Sammona-kodam* of Siam, the *Sommonarkutana* of Pegu, are but one and the same personage, whose sect has spread like the Indian fig-tree, which multiplies from itself, by transforming the extremities of its branches into roots.

This identity of all these characters with *Botta*, appears to me extremely probable. The Indians represent him with woolly hair. No black of Asia, however, has hair of the same kind. From this I infer, that he was a stranger. Kempfer was resolved he should come from Egypt; for men have a strange desire that great personages should travel. He remarks, that it is about twenty-four centuries since Cambyses extirpated the religion of the Egyptians, and either banished or massacred their priests. This date agrees pretty well with the chronology of the Siamese and Japanese; consequently he is of opinion, that the priests of Memphis fled for refuge into India; there preached their religion; and that one of them, who possessed greater talents than the rest, and made the greatest number of proselytes, was this *Botta*, whose name they still preserve. But Pythagoras, who travelled into India, and found the same doctrines in it then that we find now, was certainly there before Cambyses invaded Egypt. Besides, Indian as well as Japanese traditions make *Botta* and *Xaca* much more ancient than this king of Persia.

But

" But although those strong authorities were insufficient to destroy Kempfer's system, to imagine that these priests setting out from Egypt, should traverse India and China, in order to get to Japan; that this journey, with those innumerable conversions, should be accomplished in so short a time; is to impose upon the priests a most formidable course of travels, and to attribute to the converted a very surprizing degree of docility. This virtue, if we may judge of it from the example of the Persians, the Indians, and the Chinese, is by no means that of the Asiatics, who have been uniformly attached to their ancient usages, and as uniformly on their guard against the opinions of strangers. If I do not believe in those travels, it is not because I find no resemblances between the Egyptians and the nations of Asia. I shall make no mention here of those with which M. de Mairan has entertained Father Perennin, nor of the worship of the god Apis, so similar to the veneration of the Indians for the cow; I will confine myself to such as, I believe, I have discovered. The Japanese have twelve gods, divided into two classes; seven primitive, and five who have been since added to the list *. This number of twelve gods, evidently relates to the signs of the Zodiac, to the months of the year, and to the period of twelve years, whose use was, and is still, universal in Asia. The Egyp-

* Hist. des Voy. tom. xi. p. 41, 42, 230.

tians

tians have, in the same manner, twelve gods; and this of itself is a singular conformity. But this is not all; the gods of the Egyptians were originally seven only in number; and they represented the seven planets: the five others were added, to make them correspond to the twelve signs of the Zodiac *. There is, then, the same number of gods, and the same division of these gods into seven and five, in Japan and in Egypt. I fancy, Sir, this conformity will be found pretty singular. Here, then, is another no less so. We know that the Mercury of the Greeks, the inventor of writing, and all the arts, is the same with the *Thoth* of the Egyptians; but this *Thoth*, and the *Batta* of the Indians, appear to me one and the same personage. The fourth day of the Indian week is dedicated to *Butta*, the founder of their philosophy, as it is among the Egyptians to *Thoth*, the inventor of the arts and sciences; and this day is marked equally among both people, by the planet which we name Mercury †. It seems to be contrary to all probability, that such examples of resemblance should be the work of chance.

You know, Sir, that among the Chinese, the word *Tien*, by which they denote the Supreme Being, imports, in its primitive sense, the heavens; whether it be, that they formerly worshipped the

* Jablonski, Pantheon Egypt. Proleg. p. 61, 84.

† Hist. de l'Astron. Anc. p. 79.

heavens,

heavens, or that they only understood by this word, the spirit of those regions. Lalouber, who was a curious and well-informed traveller, having communicated to the learned Herbelot all that he knew of the Siamese language, in order that it might be compared with the Persian, Herbelot found that the god of the Siamese, Sommona-kodom, signifies in Persian, the ancient, or eternal and uncreated heavens. The Persian, like the Hebrew, make no difference between those significations. "Hence Lalouber is induced to believe, that the ancestors of the Siamese worshipped the heavens, as well as the Chinese, and perhaps the ancient Persians; but having afterwards embraced the doctrine of the Metempsychosis, and lost sight of the true sense of the word, they changed the soul, or spirit of the heavens, into a man endowed with a great number of fabulous attributes *."—I have made Lalouber speak for himself: I could say nothing stronger in favour of my opinion.

This brings to my recollection another conformity, which I ought not to omit. It is said in the History of the Atlantes, that Uranus, their first king, Uranus, who rendered them a civilized people, obtained an apotheosis after his death †, and gave his name to the heavens. This ancient term for the mansion of the gods and the stars, has remained in

* Hist. des Voy. tom. xxxvi p. 342.
† Diodore de Sicile, lib. iii.

the Greek language with the same signification. The Greeks have changed him into a muse, who presides over the sciences, and particularly astronomy, conformably to the tradition of the light introduced by this ancient legislator. Here a striking analogy may be observed between the *Tien* of the Chinese, the Sommona-kodom of the Siamese, and the Uranus of the Atlantes: it is in all cases the heavens; a circumstance which justifies the idea of Laloubet. We can easily conceive how they might make the spirit of the heavens an individual, or rather, how a man became the spirit of the heavens. It was the Atlantes who made this apotheosis. It should seem, then, that the worship of the heavens has been universal, and that the world had primitively a legislator, and one only.

The doctrine of two principles does not appear to have been less universally diffused: it was the basis of the Persian theology. I have already observed, that it has been found in India, in the kingdom of Pegu. It exists in the Chinese philosophy: inasmuch as it reduces every thing to two principles, rest and motion. One thing cannot escape you, Sir; I mean, that the Persians, uniting the belief of two principles with the worship of fire, it seems natural thence to conclude, that fire made one of those principles. In fact, they adore it for no other reason, but that they regard it as the universal agent of Nature,

ture, and the emblem of the Divinity. But this universal agent, this soul of the world, the source of heat and motion, has a strong analogy to the principle which produces motion in the Chinese philosophy: and by attending to the conformity of the ideas of the two people in this respect, one may see if I have not advanced with reason, that the dogma of two principles had a physical origin. "

The custom of libations; the effusion of water in festivals; the picture of the primitive innocence of the world, and of the golden age; the memory of the deluge; the terror it spread over the earth; the pretended calculation of certain periods, at the end of which the same terrible calamity would return; the worship of mountains; the tradition of giants, and that of the Atlantic Island; are striking conformities, which prevail among the greatest part of mankind;—but they have three strong features of resemblance, which merit all our attention. The first is this: that among some, their principal divinity; among others, their first legislator; among all, the object of their worship, or the source of their philosophy, is one and the same character: secondly, that the doctrine of two principles, the metempsychosis, the celestial spirits; in one word, all those systems of religion and theology are so universally diffused through Asia, that we are induced to make but one people of all the nations in that vast portion

of the globe. In fine, the last feature of resemblance, and the most impressive of all, is this—that all those different modes of theology are nothing but corruptions of a system of philosophy, erroneous, it is true, but profound; I mean that of a universal mind, that of two principles in Nature, inert matter, and a force or universal soul, by which it is animated. If these conformities were founded in error, they would only, for that reason, be the more conclusive. Similar testimonies in favour of the truth do not prove a previous concert: the uniformity of a lie is a proof of collusion. We shall see in the following letter, conformities equally singular, since they relate to the sciences.

I am, with respect, &c.

FOURTH LETTER TO M. DE VOLTAIRE.

[Conformities of Ancient Nations, in respect of the Sciences, and their relative Institutions.]

Paris, 1st Sept. 1776.

THE sciences, Sir, and above all, astronomy, presents us, in all the nations of Asia, with conformities of a different description: they relate to truths, and the common objects of human inquiry. One should be tempted, at first sight, to believe that they lie within the reach of all men: but they are matter of painful investigation and inquiry: they demand much time, and suppose a certain ripeness or maturity of the understanding. These truths and ideas are the result and effect of a certain number of elements, which must have been separately acquired; and this union of circumstances is itself a striking conformity. I shall quote to you, in the first place, the usage of making their buildings face the east; a usage which is found among the Egyptians, the Chaldeans, the Indians, and the Chinese*; that is to say, among the four most ancient nations of the world.

* Hist. de l'Astr. Anc.

This usage obtains chiefly in temples and public edifices. It no doubt owes its origin to religion; and as the worship of fire seems to be the primitive mode of worship, we may believe that the ancients made their temples to face the east, and placed its entrance towards the same quarter, in order to have the earliest view of the sun, and to introduce his rays into the sanctuary. It is impossible not to discover here a unity of ideas and motives; but what is still more remarkable, the four nations I have quoted had made the same progress in astronomy, and possessed the same methods previously necessary for making their buildings front the four quarters of the world. You know that M. de Chacelles verified the position of the pyramids of Egypt, and found their direction extremely exact.

The period of sixty years, which serves the purpose of chronology, belongs to the same people, and, we may add, to all the nations, ancient and modern, of the great continent of Asia. Whatever be the origin of this period, whether the number of years was selected for some particular reason, or whether its choice was entirely arbitrary, it must appear very extraordinary, that all nations should have concurred in the same reasons, or coincided by accident in the same choice. This agreement will be more sensible, and appear more surprizing still, when we reflect that the greatest part of these nations had other

periods of a hundred and eighty, six hundred, and three thousand six hundred years; that they divided the length of the day into sixty hours, the hour into sixty minutes, &c.; that they divided the circle into three hundred and sixty degrees, and the radius into sixty parts. This predilection of all nations for the sexagesimal number, seems to prove that they knew it had the property of having many divisions; since choice implies certain reasons of preference. But this choice in common to all, and the same leading principle in their institutions, must be matter of astonishment, unless they are supposed to proceed from the same source. I might venture to affirm, that since the beginning of the world, chance never produced an agreement upon those two points, between any two people who had no affinity of origin or intercourse.

Let us proceed to the two divisions of the Zodiac into twelve and twenty-eight parts, equally common to those nations. It will not be improper to point out here, the train of ideas which it was necessary to pursue. The first branch of previous information, is the motion of the sun. We have already had occasion to observe how many ages must have elapsed before they could suspect the motion of his body. How many are the people who enjoy his light, and see him every day rise and set, without concerning themselves, in the smallest degree, whether he occu-

pies the same place in the heavens! It was, then, necessary to ascertain the time he required to accomplish a revolution; to discover whether he pursued constantly the same path; in a word, to mark out among the stars the line he traced in the heavens by this path. It was natural enough to divide this line; but in the various divisions they might adopt, these nations concurred in the choice of those which the moon suggested to them, in twenty-eight parts, corresponding to the intervals of her diurnal motion. These nations agreed also in endeavouring to reconcile the revolutions of the sun and moon, to subdivide the year into twelve lunar months, and to set off the Zodiac into twelve corresponding portions.

Is this wonderful uniformity in the train of ideas, then, natural? Is science itself essential to the mind of man?—The Greeks had no ideas of it, but what they derived from their travels in the East; and the Romans never thought of it at all. The nations of Europe, divided in interests, and occupied for ages in mutual distraction, after having become old in barbarity, received not a single ray of light until their invasion by the Moors, and the arrival of a few Greeks, who escaped from the sack of Constantinople. This adoptive knowledge was that of Asia. Not one of those nations had entertained the idea of dividing the Zodiac. The Mexicans, a people of considerable civilization, instructed in the revolution

of the sun, divided it into months of twenty days: they were strangers to the division of the year into twelve months, as well as to that of the Zodiac into twelve signs. If this division be so natural, how came it that it never occurred to the Mexicans; they who had a climate as serene as that of the Indians, and a sky equally favourable to the progress of astronomy?

If there is any one thing intimately connected with the nature of man, it is legislation: it is founded in our mutual wants and reciprocal relations: it has for its object to repress the passions, which are every where the same; but after all, what strange varieties do we not observe in the laws of different people!— If men, however, cannot agree upon their mutual relations, should we expect their agreement in those ideas which the face of the heavens inspires, or in the divisions of which it is susceptible? The Marchioness of M. de Fontenelle discovered in the spots of the moon a group of happy lovers; the parish-priest could see nothing but church-steeples. This is the history of men and nations. It would, therefore, be extremely singular if two people, without any manner of connection, should have agreed in imagining the division of the Zodiac into twelve, or twenty-eight parts. How much more, then, is it not extraordinary, to find those two divisions combined among all the Asiatic nations, but especially among the Egyp—

Egyptians and the Chinese, separated by a distance of more than three thousand leagues?

Permit me, Sir, to make one observation more. Macrobius and Sextus Empiricus inform us, that the Chaldeans and Egyptians divided the Zodiac into twelve parts, by the means of the fall of water. Men have been used to ridicule this anecdote, and to regard it as fabulous; but they were wrong. The poet has invented fictions for the entertainment of the public; the historian has imposed upon posterity, from motives of interest; but the history of this division has no pretensions to be an amusing tale. I do not well see what species of interest could induce them to invent it; and I am persuaded Macrobius and Sextus Empiricus have faithfully delivered down to us an ancient tradition. This division was executed in the following manner: the ancients having a large vase full of water, suffered it to run by an aperture the moment a certain star became visible on the horizon, and until the moment when it shewed itself there again the next day. They divided the water that had run in the course of the day into twelve parts; and as the Equator makes a complete revolution in twenty-four hours, they imagined that the twelfth part of this water would measure, by the time of its running, the twelfth part of the Equator. It was a mistake: the water would fall with greater velocity, and force its way in greater abundance, in proportion

as

as it descended from a greater height, and from a fuller vessel. By this method, the first twelfth part would correspond, by the time of its fall, to the twenty-fourth part of the Equator, and the last portion of the water to a space greater than the fourth of the circumference. This error is too palpable to have escaped the notice of the ancients. I imagine I have hit upon the expedient which they adopted, as a remedy for the inequality in the fall of the water. It was this: they returned the water into the vase, in proportion as each twelfth part came off. By this means they kept the vase constantly full, and the fall equal. It happened only that the Equator was divided into twenty-four parts, in lieu of twelve.

We discover the most marked traces of this primitive division. The Indians had months of fifteen days: the Persians divided their year into twenty-four months: and, what is still more remarkable, the Chinese have preserved the same division: their Zodiac is, to this day, divided into twenty-four parts *. Is it not very singular, that Macrobius and Sextus Empiricus should relate to us a piece of history, the supplement of which is found in China? Is it not natural to infer, that this division and method are more ancient than either the Chaldeans or the Chinese? If any thing can give us the idea of a science tortured and dismembered, the image of the ruins of an

* Hist. de l'Astr. Anc. Eclair. lib. ix. sec. 14.

ancient

ancient constitution, it is when we find in China the usage established of a division, whose method and tradition are preserved at the other extremity of Asia. Let us add what is not only probable, but almost amounts to demonstrative evidence. I have proven, from an induction of the strongest circumstances, that the division of the Zodiac into twelve signs, must have preceded the Christian æra by more than four thousand six hundred years*; it had consequently been executed more than thirteen or fourteen hundred years before the existence of the Chinese, the Indians, and the most ancient people we know; and, inasmuch as it is equally found among all those nations, it ought undoubtedly to be placed to the account of their common origin: it is then the work or the institution of an unknown people, who had gone before them.

Is not this another astonishing conformity? I mean, that so large a proportion of mankind should have concurred in measuring time by the small period of seven days, which we term a week? Among these people, the Chinese, the Indians, and the Egyptians, are equally agreed in distinguishing the days by the names of the planets. It is very remarkable, that the planets, in this case, have been arranged in an order which appears arbitrary, or at least which is founded in reasons of which we are entirely ignorant. I have

* Hist. de l'Astr. Anc. Eclair. lib. iii. sec. 10.

said,

said, and I am not afraid to repeat, that it is impossible accident should lead these three nations, separately, to the division of time into intervals of seven days, and to name these seven days by the seven planets, and then to arrange them according to an order wholly arbitrary. Chance produces no such resemblances.

We must say, in like manner, Sir, that if, according to the idea of Leibnitz and Father Bouvet, that which they call the *Koua* of Fohi, those lines, some entire, and some broken, are the two characteristics of a binary arithmetic, whence results a very happy solution of the combination of those lines*; it will follow, that there existed before the times of Fohi a system of numeration: such a system is not to be expected at the first establishment of a people: it is not the work of the founder, ignorant and rude himself; of a nation still more rude: it is a great deal, if, at that period, they can count upon their fingers. But these lines, preserved for so many ages, in which the Chinese pretend to read so many fine things, were they only an attempt at forming combinations, and nothing more, they must still be regarded as the result of meditation. I find myself but little disposed to meditate, when I am pressed by hunger, and employed in providing a dinner; when I must think of clothing myself against the cold; or

* Memoire de l'Acad. des Sciences, 1703, p. 58.

when

when the rain pours upon me till I have built my hut. You would no doubt laugh at a man who, in those necessitous circumstances, should amuse himself in arranging pebbles according to a certain order and symmetry. In their case, there was more than ridicule, there was incapacity against them. Previous to the improvements of civilized society, labour scarcely suffices to supply the wants of man: every thing is in activity. Nature, by the impulse of genius, raises one man above the rest, for the purpose of governing and instructing them; but this genius contents itself with teaching them to sew skins, to erect huts, to cultivate the chace, or perhaps a rude species of tillage. This is precisely what Descartes and Newton would have done, had they been born among the Hottentots. This early genius has no idea of lines, arithmetic, or combinations; ideas which result from leisure and the maturity of an improved understanding. If Fohi introduced them into China, they were new to his people and to himself, and the fruits of a previous state of the sciences.

I shall not repeat, Sir, what I have quoted from M. L'Abbé Roussier, who considers the musical system of the Greeks, and that of the Chinese, as supplementary one of the other; and that those two systems are the separate members of a primitive system, more ancient than either the Greeks or the Chinese.

I pro-

I proceed to what I have stated upon the long measures of the Greeks and Romans. I have observed, that *they refer to a system of combined measures, united by an exact relation, which is derived from a universal standard of measure**. I have explained this idea, in a memorial read at a public meeting of the Academy of Sciences, the 17th of April of this year. I think I have proven in this memorial, that the ancient measurements of the circumference of the earth, that of Ptolomy, of a hundred and four score stadia; that of Popidonius, of two hundred and forty thousand stadia; two others cited, one by Cleomedes, of three hundred thousand; the other by Aristotle, of four hundred thousand stadia; a similar measurement, mentioned by a Persian author, calculated at eight thousand parasangas; are nothing but one and the same determination of the earth's circumference, reduced to different sorts of stadia and parasangas. I venture to assure you, Sir, that this conclusion rests upon the fullest evidence. Hence it follows, in fact, that all the stadia, the thousands, the Persian parasanga, the Persian schæn, the Egyptian schæn, the cose, and the gau, certain kinds of Indian measures, are all allied to each other by exact and determinate relations. All these different measures are, at bottom, nothing but a smaller measure, a certain number of times repeated; and this one only original measure,

* Hist. de l'Astr. Anc. p. 85.

is

is the great cubit, preserved on the Nilometer, at Cairo*. This was the basis of a general system of all the measures of Asia, and of antiquity.

I shall not enter into the question, here, whether these measures might not have passed from one nation to another: I shall have occasion to state presently, what I conceive, as to the possibility of such a communication. I have only to observe, that the channels of communication were never so open, nor mankind so much concentrated, as they are in our own times, by the means of commerce, of the arts and sciences, in Europe. The leagues, however, and in general all the measures of modern nations, differ from one another: they have no point of unity, to which they may all equally be referred: they present no system similar to that which I have described; and this system is a grand characteristic, which clearly denotes unity of invention. This cubit is certainly not in the proportion of the human stature, such as it exists at present. Perhaps it belongs to Nature, in a more vigorous state; but it is a more probable conjecture, to suppose that this cubit was augmented, in order to connect it with the measures of the earth. It seems more than probable, that the circumference of the globe would not have contained so exactly four hundred thousand stadia, eight thou-

* Memoire de l'Acad. des Sciences, 1776.

This cubit is of 20½ inches: it exists still at Florence, under the name of brasse.

sand

and parasangas, seventy-two millions of cubits, if these itinerary measures had not been regulated according to the extent of that circumference. The ancients, then, like ourselves, have had the idea of rendering their measures invariable, by taking them from Nature; and this idea, which still remains to be executed among us, seems to have had its completion among them. This institution of measures, gave a right to expect that that of the earth should be executed with precision. Accordingly, the most ancient determination of the earth's circumference, reported by Aristotle, as well as the four others, which are only copies of the same, has an accuracy equal to that undertaken in these modern times. This, Sir, is what clearly results from the memorial of which I have just given you an extract. The above determination, when the very circumstance of its precision is considered, cannot be regarded as the work of the Greeks, previous to Aristotle: they were acquainted neither with the instruments, nor the art of applying them to the purposes of observation. Aristotle, besides, does not give us the names of its authors; a silence which amounts to a demonstration that Greek vanity had not the smallest pretensions on this head. I do not see one among the known nations of Asia, to whom this determination could belong. What the Chaldeans and Chinese have done since in the same way, is no better than

a rude estimate, compared with this measurement; consequently, the exact determination of the earth's circumference, with the improved state of the arts, which it pre-supposes, can be attributed to none other than a people unknown in antiquity. It will now be asked, how this people came to be unknown to us, if they were cotemporaries of the Indians and Chaldeans?—and how their memory could be lost, while that of their sciences and philosophy has been handed down to us? But, on the present occasion, I confine myself to this conclusion, that their determination of the earth's circumference, all their itinerary measures, the primitive and universal cubit, which is its basis, have been preserved among the Indians, the Persians, the Chaldeans, and the Egyptians, by whom they were transmitted to the Greeks and Romans.

Let us now, Sir, sum up, under one point of view, all that we have just stated. We have found the same genius, the same ideas, in a vast number of ancient festivals of different nations; every where the fiction of the golden age, and the memory of the deluge; every where the same character in their superstitions and fables; a uniformity of traditions; astronomical improvements, which imply a corresponding progress in science; civil institutions for chronology and the regulation of time, derived from one source, and identically the same; an entire and con-

consistent system of music, whose two halves, separated by revolutions incident to human affairs, had been transported to the two extremities of the globe; a primitive measure, which exists still every where in Asia, by itself, or in its component parts, and which was connected with a very ancient and accurate determination of the magnitude of the globe; one and the same legislator, for the sciences, the arts, and religion; the same systems of physics and theology; the same train of ideas, in founding one in the corruptions of the other, and in presenting in their principles of morals, and ideas of religion, nothing but systems of physics destroyed and forgotten: in fine, every where remaining traces of ignorance succeeding to light and science. You will acknowledge, Sir, that all these resemblances are equally evident and extraordinary. There is no way of explaining them, otherwise than either by supposing a free and easy intercourse among the ancient nations of Asia; or, by affirming that those similar ideas, those institutions of so perfect a conformity, have such an affinity with the human mind, that it is impossible for a man, left to himself, not to come at them; or, in short, by deducing them from a certain relation of kindred, and from one individual source of all ancient nations.—I leave you a little relaxation, Sir, before I proceed to the discussion of these three questions.

I am, with respect, &c.

FIFTH LETTER TO M. DE VOLTAIRE.

[These conformities are not the result of communication.]

Paris, 7th Sept. 1776.

Is then, Sir, that of the communication of ideas so easy a matter? Have you ever seen a Molinist convert a disciple of Jansenius? The friends and adversaries of the corn-trade divide the capital: they sup together, they dispute, they lose their temper; but I have not observed that they make many proselytes one from the other. Time, far from making us wiser, only renders us more obstinate. Ideas and systems, after being long in possession, become a sort of patrimony, which we defend with zeal. Did ever a young man, how grounded soever in reason and truth, produce a change of opinion in a man of fourscore? The Abbé De Molieres died fighting upon the ruins of the system of Descartes. Such conflict resembles those battles in the field, which decide nothing, and after which the two armies sing a *Te Deum*.

We must confess it, we are the heirs of prejudice much more than of truth: truth itself is never obstinate,

nate, until it degenerates into prejudice. We should not dispute, we should enlighten one another, if we could make ourselves mutually understood: but our conversations are no better than the reasoning of the deaf: our ideas, in process of time, strike deep root; they send forth branches that fill up the whole head; we neither see nor listen to any thing but them; all access is shut, and forbidden; new ideas, weak, because they are recent, have not force enough to make their way; and in order to find admission, they wait for raw and inexperienced heads: thus it is the youth alone that give them a welcome reception: they cannot become new again, but in the course of many generations.

What I have just said of men, will apply to nations in general, with this difference, that a nation is always more obstinate than an individual. The multitude have no ears; antiquated in the footsteps of their ancestors, they preserve their manners and opinions with all the fondness and dotage of old age.

There is, no doubt, a certain state of things which at length admits, between different people, a communication of some ideas; but this communication is always slow and difficult. It appears to me, that we have not rightly ascertained the manner in which it takes place among the people who have the greatest intercourse with one another; whether, from mechanical or physical causes: man is an imitator; but

if Nature intended that he should be led by a secret instinct, or strong impulse of the mind, to do whatever he sees done, she at the same time intended, that by his partiality for himself, he should preserve his own originality. These two powers balance each other: one induces man to seek a mutual resemblance, in order to please; the other restrains him from appearing but in the same colours, and with the same face. It is this principle of self-love, that maintains a variety of character in society; it is that of imitation, that forms what is called the national character. Men, united for their security, in the course of their living together, lose every day somewhat of those deep shades that distinguish their character: in the warfare of tastes and passions, and the collision of opinions, differences insensibly wear off, if I may use the expression, by a sort of friction: hence there results a general form, which is in common to each individual: but this effect is only produced by length of time; it is the consequence of the silent operation of habit, which, as it is constantly alive and active, is a more powerful principle than self-love, which acts only occasionally: it is because that operation is insensible, that self-love, taken by surprize, is not upon the alert, till it is no longer time to remedy the evil: besides, there is a great difference between the intercourse of nations with one another, and that of men of the same nation. Nature,

ture, as well as policy, has placed certain barriers between different people: a communication cannot be kept up without being known; efforts are not multiplied from habit; national pride and jealousy keep watch on the frontiers over opinion, which would be inclined to overleap them, like the officers of the king's revenue over contraband goods. Nature, which established a state of war between man and man, and between one people and another, has implanted the same division in their minds: they resist the admission of certain ideas, certain opinions, certain usages; not because they are bad, but because they are foreign. If some of those ideas or opinions contrive to introduce themselves, it is by fraudulent and illicit methods; and truth, equally the property of all countries, to which man never fails to oppose a resistance, proportioned to the inert and ignorant state of his mind, is sure to be proscribed, the moment it presents itself in a strange dress. If it is admitted at all, it is not till after repeated contests between reason and prejudice. It must have been long and maturely examined, and that examination must have so naturalized it in men's minds, as to make them lose sight of its origin.

After these considerations, Sir, which to me appear true, and derived from the nature of things, you will allow, that people who have had nothing, originally, alike, how contiguous soever as neighbours,

bours, are in little danger of confounding their manners, opinions, and usages; and that they can never acquire the smallest resemblance on certain points, but in the course of a long series of ages. These resemblances form exceptions: exceptions are always few in number. It is possible to state many examples, to shew the difficulty of introducing foreign customs. I shall only cite to you the reformation of the Gregorian Calendar; a reform of indispensible necessity, executed by Pope Gregory XIII.: it was rejected, however, by the Protestant States. Prejudice, and even religious jealousy, have at length acquiesced; but it required almost two hundred years to render this reform universal. Nevertheless, policy, commerce, and the light of science, have established in all the nations of Europe, the easiest intercourse. So intimately are they connected, that all those nations may be regarded as one people, under the name of Europeans; for here we ought to attend to a very important consideration; I mean, a population every where uniform and compact. The different parts of Europe are all equally inhabited; the inhabitants are in contact with each other, and men, so to speak, may shake hands, from one extremity of Europe to the other. The uniformity of this population has established a connection, and occasioned a certain union, among the people who inhabit the two sides of a frontier: the marked features of difference

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are softened by degrees, and in time almost entirely blended in one common shade. The Fleming, who is separated from his French neighbour by an imaginary line, ought to have a greater analogy to him than an Englishman, circumscribed as he is, and shut up in his island, by the sea.

If we were to transport ourselves into a vast continent where this uninterrupted population fails, where high mountains, and above all, desarts, separate the different nations, the communication, and conveyance of the most necessary articles, become difficult, perhaps impracticable: the exchange of ideas, founded upon a want less real and less known, would have no existence. Nations isolated in this manner, besides that they would have few demands for this exchange, would have a greater degree of pride, national jealousy, and contempt, for every thing that did not make a part of themselves. Concentrated together, they would naturally acquire that character of indifference and selfishness, which necessarily actuates a man in an isolated state, and who never lives but with his own people. This vast continent is Asia. If we except China, where a numerous population, and an active commerce, have forced the public police to trace out roads, and open canals, you will agree, Sir, that in by far the greatest part of Asia, communication is difficult. The natives seldom travel, but in pursuit of war, or commerce. Commerce is carried

on

on by means of caravans; and these caravans are a proof that it is neither free nor easy. A burning sun, sands, desarts peopled with robbers, render travelling painful and dangerous; hunger and thirst endanger, also, the life of the traveller. Those routes supply no provisions, because they are little frequented. There is, then, some little difference between them and our long avenues of trees, where each step presents the traveller with every convenience and resource he can desire. An Indian travelling in Europe, would fancy he walked all day, and lay down every evening in his own bed.

You will admit, Sir, that a state of war enlightens neither party: frequently two people fight, without the smallest knowledge of each other. It is possible to see one's country desolated for a long time, and on repeated occasions, by a foreign people, whom nobody knows. Europe will cite us the example of the Normans, who gave their name to one of our best provinces. The name implies the ignorance of the times. They were called *the Men of the North*, because they were only known by the wind that brought them. War, then, was the only relation that subsisted between the North and South of Europe. Commerce makes less noise, but it is of little more use in the diffusion of knowlege. If we observe the interest our merchants take in our scientific pursuits, we may have some idea of the degree of

taste

taste they are fitted to inspire for them into strangers. They are heavier loaded with stuffs and provisions, than with philosophical ideas. Opinions are not a saleable commodity: they are like the specie; every people have their own.

I do not mean to say, that the relations of commerce, and even those of war, may not procure some exchange of knowledge. But these causes operate so slowly, that it would require many ages before they could produce a sensible effect. Besides, there is a vast interval between the exchange of knowledge and the adoption of usages and opinions. This adoption, difficult even between men who live in the same society, becomes infinitely more so between men of different nations, who see one another but rarely, and who are constantly guarded against this effect from people with whom we have only a transient acquaintance. Such adoption appears to me absolutely impracticable; when those nations are isolated, not only by their position, but by their policy and national pride. This high consideration of a people for themselves, and their profound contempt of all others, is a proof they do not know them, and that they have had but little reciprocal communication: pride sinks on the scale by comparison, and is taught to keep within due bounds. The pride of the Chinese is well known. M. De Gentil is an ocular witness of that of the Indians. Ancient history and eastern travels

vels present us, on every occasion, with evidence of the care that this people have taken to concentrate, isolate, and deny themselves all communication with strangers. The Egyptian priests, when they consecrated their kings, made them take an oath, that, under no pretence whatever, they should ever introduce a strange usage*. Moses, with a view to preserve the purity of religion, delivered a similar precept to the Hebrews; but it is a matter of universal obligation in Asia. The religious mysteries of Greece were imitations of those of the East. In these, the priests concealed their doctrines, either in impenetrable secrecy, or under ingenious emblems, to withhold the knowledge of them from all but such as had been initiated.

The entrance into China is forbidden: a man must not go beyond the limits of the sea-port: he must be a Chinese, or an ambassador, or a jesuit, if he would proceed to Pekin. All this, Sir, is but little favourable to such an intercourse as might effect the resemblances we have taken notice of in Asia.

Let us farther add, that the different religions place another barrier between the nations of Asia. A man never takes a wife in a sect different from his own. Two men, unless they worship the same gods, and in the same manner, cannot eat together. Contact, or even the approach of a stranger, is enough to con-

* Fercret, Def. de la Chronol. p. 395.

vey impurity. Promiscuous assemblies of men, and the society they enjoy together, are undoubtedly the means of exchanging ideas; but what becomes of society, if love, that natural and sacred principle of union; if the sweets of joy and equality, and the pleasures of the table, are laid under an interdict? Men coalesce and incorporate by means of family alliances: their mutual want of these, constitutes essential ties: dissolve them, and what will remain to man, but the rivality of ambition, fame, faction, and interest?

The nations of Asia appear to me particularly distinguished by a blind and obstinate attachment to their ancient usages. This attachment, however, has its source in the economy of Nature. Youth is the age of imitation: we have pleasure in repeating whatever we have seen done by our father, our grandfather, and such as are the objects of our respect: when years come upon us, we are fond to re-trace the frolics of childhood; just as we love to re-visit the spot of our nativity. It is pleasing to ascend, even by recollection, against the current of time, which hurries us down the stream; and the same principle which preserves the spirit and usages of a family, preserves the usages of a nation, which is nothing but a larger family. This is a feature in common to all men, and to all nations: but a very powerful cause, which no longer exists, must have, in ancient

cient times, redoubled this attachment; I mean a respect for old men. I do not speak here of that which Nature has implanted in our breast for those who gave us birth, nor of that sentiment of veneration which is excited in us for a veteran who has nobly finished his career, and who, bending under a load of years, is a living example of proven virtue. These are the sentiments of sensible and virtuous minds, in all countries: they constitute a general cause; and we are seeking a cause of a particular kind. This cause, therefore, consists in the instruction old men used to infuse into their discourse. Nothing was known, but by them; the necessity, as well as the pleasure, of listening to them, begot and inspired veneration: the facts, the opinions, the manners, and usages, conveyed to men by this sacred mode of tradition, composed the wisdom of their ancestors: they inhaled a prejudice with their first breath, in favour of this wisdom. A father became grey in experience, but still, full of reverence for the instruction of his own, transmitted the same instruction and reverence, which acquired additional strength and influence in the mind of the young pupil. The old men of our days enjoy less of that consideration, so highly recommended in antiquity, and which did so much honour to Lacedemon: this is a consequence and effect arising from the invention of printing. In ancient times, men carried every thing in their head;

head; science, history, morals; *all men, elder, philosophers*, were synonimous terms. At present, when age comes to impair their memory, they are often less informed than young men: they are relinquished for books, which are the general preceptors of mankind. Among the people who read little or none, they are listened to, and more respected; but in the enlightened world, it is only the Nestor of Ferney who continues to be the oracle of men of taste and philosophy. In relaxing the ties of family, men have made way for those of nations: filial veneration has been weakened, by extending its sphere under the name of humanity; but in those days it acquired fresh vigour at each period of life, and was the guardian of the spirit and wisdom of their ancestors.

Thus we see in what manner a mass of opinions, usages, and customs, was framed, which, by the slow progress of its formation, as well as the solidity of its basis, was in condition to resist the introduction of novelties, and to preclude the confusion of manners. This picture serves to explain how a nation in a state of dispersion, such as the Jews, the Parsis, and the Banians, may live in the midst of other nations, without incorporating or being corrupted by them; but it by no means gives countenance to the idea of an easy and multifarious communication of opinions and usages. It would be singular enough, were this sentiment of attachment to preserve them in a

foreign

foreign country, under so many chances of losing them; whilst in the very country where they reigned, where they were united, where the national spirit was in all its vigour, it should adopt, so easily, new usages and customs.

Let us proceed a step farther, Sir. This communication could have no existence at all, unless we suppose a mutual acquaintance and continued intercourse among the different nations of Asia. But we are told by travellers, that the Asiatics seldom pass the limits of their own country; and it would not be difficult to prove, that they have very little knowledge of one another. The Indians have never sent off colonies; nor do they ever admit the introduction of strangers. Certain merchants travel into the adjacent countries, for the purposes of trade: the rest of the nation remain by their fire-sides; cultivate their rice, spin, or dye their stuffs, and scarcely know the name of the people who dwell on the other side of their own boundaries. What is true of the Indians, applies equally to the other nations of Asia. There is a little coasting-trade carried on between the islands and the main land, between Arabia and India, and between India and China; but we can easily believe, that this maritime commerce is of modern date, in comparison of the very ancient times of which we treat.

M. Huet will tell you, Sir, that the Chinese are of Egyptian extraction; he pretends, forsooth, that they extended

extended their empire *only* the length of the Cape of Good Hope: but let us take care how we give in to his assertion. Father Perennin maintains that this is false, and that we find nothing in the Chinese history that in any degree warrants such an idea*. This people must be strangely changed; for I do not know that, at this day, they send a single vessel even so far as the Red Sea. Besides, we must always bear in mind, that the conformities of usages are as ancient as either the Egyptian or Chinese monarchy: in order to explain the appearance, we ought to go back to the time of their first establishment. It probably would be difficult to shew that foreign trade, fleets, or even the use of ships, are of so high antiquity. Besides, supposing the Egyptians, as some have thought, had sent fleets to China, they would have found the ports shut against them, or, at least, the people would not have been permitted to go beyond their limits.

These suppositions, more than doubtful, afford, besides, but a slender subterfuge; inasmuch as we have shewn, that the travels of merchants are not undertaken for the exchange of ideas, but of silk and tea; for the more solid consideration of gold. The missionaries, who have enjoyed a sort of exclusive privilege, and who have been received even at court, have instructed the Emperor; but they have made

* Lettres Edif. tom. xxvi. p. 222.

but small progress in enlightening China: the Chinese have not adopted a single European usage; not even of those which are the most useful. We have seen, that the Chinese have a contempt both for our telescopes and watches.

How are we to imagine, that, in former times, at the arrival of a certain pretended Egyptian fleet, this people laid aside their usages, opinions, and ideas, to make way for those of a few merchants, suffered for a moment in their harbours, and denied access to the interior of the empire? Our Indian companies have enlightened neither Malabar nor Coromandel. It is, nevertheless, what we had a more natural right to expect from a fixed establishment, and their mingling with the natives; a circumstance to which it necessarily gives occasion. The Russian fleet made the tour of Europe; but I have not heard that they any where introduced the Greek ritual. What does not happen now, in this respect, happened as little in the times of antiquity; for men and such obstacles are always the same.

We may see in the history of China, a list of communications which this empire has had with other nations: we there read, in such a year *there came strangers from the kingdom of Yuise:* this kingdom, it is said is that of the Usbeck Tartars*;—*in such a*

* Sonnerat, Recueil des Obser. Faites aux Indes, et a la Chine,

year there came people from the countries of the West: these people were Persians*.—The care of recording the arrival of those strangers, proves that it was a singular and isolated event, and not in consequence of any settled and regular communication. Their designing them people or men of the West, demonstrates that the Chinese knew them no better than we knew the Normans, when they ravaged France, and when Rollo gave their name to Normandy. If you except, Sir, the Scythians and Tartars, who have carried their wars and irruptions in all directions, the other nations have had no disputes but with their next neighbours; the only people to whom they had the smallest acquaintance. The Assyrians have their wars with the Medes and Persians: their history but rarely takes notice of the Indians or Arabians. Wars, in ancient times, consisted merely in sudden and transitory incursions, somewhat analogous to the chace; in which they forced men to flight and concealment, that they might have time to collect and carry off the plunder. The conqueror and the conquered might be equally ignorant of each other. The Indians have always been pacific, and always enslaved. The Chinese appear to have had more affinity with the Tartars, by whom they have been over-run and conquered on different occasions. But these conquests were nothing but the irruptions

* Freret, Mem. Acad. des Inscrip. tom. xvi. p. 247.

of barbarous tribes, whose object was pillage, and the possession of a fertile soil. The Tartars, once masters of China, settled, and became naturalized in the country; insomuch that, at this day, it is not China that is subject to Tartary, but Tartary that is tributary to, and dependent on, China. The two nations have no farther communication with each other, nor have they preserved any other tie of connection, besides slavery on one side, and despotism on the other.

Those pretended communications may come to be duly appreciated, by attending to the state of Oriental geography: we come to the knowledge of countries and cities, before we get acquainted with their opinions and manners: men who have nothing but their eyes, travel long before philosophers. The Indian geography does not reach to China, towards the east: it knows no land extending north and south, but from the mountains of Caucasus to the island of Ceylon: it is little less confined on the side of the west: accordingly they are surprized to see a stranger, who does not come from one or other of the fifty little countries, or thereabout, which are comprehended within those narrow limits*. Thus the geography of the Indians only extends to the two peninsulas of India: and this is as much as to say, that they know nothing beyond their own country.

* Lett. Edif. tom. xxi. p. 3.

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The Chinese geographers are still more grossly ignorant: they make the earth a square: this form is that of their empire; and the figure of the world ought to be the same; since they imagine they occupy by far the greatest part of it. The neighbouring nations are thrown, as it were by chance, on the borders of the map, under the names of *a monstrous race of men, giants, dwarfs**. This shews that the Chinese have been fortunate enough to have no quarrels with their neighbours; and that, concentrated in their own wisdom, they have lived in a state of total ignorance of every thing about them: but it is, therefore, clear, that they could receive no communication of knowledge from those nations; for we never fail to know, at least in some degree, the men who instruct us, and above all, are we in no danger of mistaking them for dwarfs.

It appears to me, that the nations of Asia remain still in an isolated state: concentrated within their boundaries, like the inhabitants of a town within their walls, they know no method of making war, but by sallies and irruptions; nor have they any commerce but with their neighbours, and that is conducted with little activity. The only idea they ever had of neighbouring nations, they obtained from vague and fabulous reports; just as the people among ourselves know, without distinguishing them, the

* Hist. de l'Acad. des Sciences, 1718, p. 71.

Regency of Algiers, Tripoli, and Tunis, by having heard, in conversation, of the Barbary corsairs, who carry Christians into slavery. We can believe, then, that the greatest part of those nations may exist together, without being acquainted. Meanwhile, let us consider, Sir, the natural propensity we have to draw closer together; a propensity which prevents the dispersion of families, and which tends to unite them in one mass, for the purpose of forming a community; a propensity which would at length incorporate all men in one society, if scourges, disasters, revolutions, physical and political, did not interpose, to arrest or suspend the natural progress of its operation. You will easily admit, that, in ancient times, the nations of Asia must have been still more isolated than they are at this day. But how, then, can we imagine they were in a situation to transmit from one people to another, the two divisions of the Zodiac, weeks of seven days, the same periods, the same systems of physics, the same usages, the same sects, the same spirit of religion, the same legislator, and above all, similar measures?—whilst, in Europe, nations which live in a sort of fraternal amity, measure distances by lengths of different kinds, and that, in France, all the influence of government has been unable to make the provinces adopt a uniformity of weights and measures.

From

From a state of things, such as exists presently in Europe, resemblances could not have been produced in so great abundance. But supposing that they might, it may be said that Asia is prodigiously changed. This, however, has not happened since our European Tartars began to ravage its coasts; nor since the conquests (true or false) of Semiramus, and the irruption of Alexander into India: it must have happened prior to a period which takes its date, at least, from the foundations of the empires of China and Babylon. If any one chooses to suppose, that, previous to this epoch, there existed such a state of civilization and social union, as would suggest or announce an ancient people, endowed with polity and learning, it must necessarily be admitted, that this ancient state of things has perished, and that all that remains of it now, exhibits only its ruins; and this is to grant me every thing that I contend for.

I am, with respect, &c.

SIXTH LETTER TO M. DE VOLTAIRE.

[Those conformities are not essentially the result of Nature: they arise from an identity of origin among all ancient nations, and are the remains of institutions which belonged to a people of still greater antiquity.]

Paris, 9th Sept. 1776.

If the conformities, Sir, of the different nations of Asia, are not the result of communication, ought we to conclude that these institutions have such an affinity with the human mind, that men, however separated, must unavoidably acquire them in the long run, according as their faculties are developed by improvement and the necessary progress of things? This question merits a careful examination.

It is said, that all men resemble one another; that they are formed of the same lump: in other words, that every where they are liars, thieves, vindictive, selfish; and every where susceptible of compassion, that quiet and gentle affection, which mixing some good with so many evils, is the germ of all the virtues. But will it be alledged that they resemble one another,

mother, in respect of the imagination; over which the air, soil, and local situation, have so much influence; the imagination always free, and always different from itself? She has before her eye the riches of Nature: her productions are nothing but combinations of facts supplied by experience; and Nature herself, every where diversified and inexhaustible, as facts are without number, her combinations are infinite.

When facts have a connection of mutual dependence, when they succeed each other in a necessary order, which is the result of eternal and known laws, that dependence, that order, constitute scientific and immutable truths. The faculty which discovers them, is that of invention. But when Nature blends and combines these facts by rules and laws of a more occult kind, and by what we commonly denominate chance, the mind is at liberty to indulge in the most arbitrary combinations. Of this description, are the delusive pictures of the agreeable arts: they are the creatures of the imagination. Traditions embellished by emblems and prodigies, allegorical fables, institutions derived from these fables, festivals of gratitude and expiation, all those poems and pictures of the first ages, are the fruit of the imagination: Nature is there imitated more or less faithfully, but always with a certain license and caprice: a license, however, which wantonly gives scope to all manner of eccentricities,

excludes

excludes resemblance. Men have no point in common, but truth: they can have no mutual resemblance, but in the exercise of reason, which distinguishes their species, which exalts and ennobles their existence, and which is every where the same, when it is equally cultivated.

But age, education, and climate, labour and modify very differently this unalterable basis. The age of a people can only be estimated by instruction: the most ancient have, in general, become old in a manner unprofitable to the progress of reason. A man who should be doomed to a lethargy from his cradle to old age, would become grey without one grain of knowledge: he would awake an *infant*. It is not enough that a nation should be old; the period of its life or duration must have been employed; men's minds must have been turned towards the sciences, and the sciences must have had a simultaneous improvement; an infallible mark of a people who owe their cultivation to themselves. They may be pronounced to have attained the age of reason, provided their views are only directed to what is good and useful; provided, above all, they have been cured of the itch of ambition and conquest, which are only the diversions of children: sanguinary diversions, it is true; like those, too, of children, which are always cruel; useless and frivolous, like their occupations, when they

they act only for the sake of acting*. The real happiness and substantial riches of a people, as well as individuals, consists in cultivating one's field in peace, and in living upon it in the enjoyment of virtue and tranquillity.

As it is by no means my wish, Sir, to be constantly finding fault with the natives of the East, I have a pleasure in acknowledging, that the Chinese have reached this last summit of human wisdom: but they have attained the age of reason, without taking that of genius in their way. Full grown men in morals, they are but children in science. Here we have an example of the influence of climate: it has inspired this people with the same indolence and apathy for discovery as for conquest. If the Chinese are proficients in morals, it is because the study of them demands no exertion; it is because the object of this study is always under the eye of man, always in him, and always about him. In China, the sciences

* All the declamations that have been delivered on the evils of war, have been found insufficient to reclaim either princes or people; perhaps the moralist might have had more success, had he tried to make them blush at their appearing on earth, for no purpose but to tear and pull down *chateaux des cartes*, castles of cards. Ambition demolishes what ambition labours to erect. A nation augments her power by means of commerce: she aggrandizes herself with the assistance of her colonies. In time these colonies revolt, and shake off their dependence; and she returns to the point from which she set out, exhausted by the efforts of acquiring and defending, and sinks under the ruins of her own greatness.

have

have remained barren and fruitless, because they require action, genius, and energy; qualities of which the nature of their climate has bereaved them. Among them, the ordinary effects of time and age have been counteracted by the influence of climate.

But of all the causes of progressive improvement, the most powerful, undoubtedly, is social education: it depends on the two first, in this respect, that it is relative to the continued application of the same people, in their scientific labours, and to the activity with which Nature favours them in the prosecution of their studies. This education consists in a certain number of acquired ideas, which are transferred to the youth, to be improved and enlarged: they are the capital of a merchant, which ought to increase with industry and time. In this traffic, the grandson, equally wise, is richer than his grandfather. In the sciences, the third generation, disciplined by the two first, with an equal share of genius, makes a fortune by the greater sum of their discoveries.

The Chinese—I quote them as the most enlightened people of Asia—the Chinese have nothing but the same uniform routine of education: the present generation know no more than the last: knowledge receives no increase in their hands; and time runs on, without affording them the smallest benefit. We cannot say, then, that all men resemble one another; for the people who pass their days in those habits of indo-

indolence and apathy, have no resemblance to the people who gave birth to a Newton and Descartes. The men and minds of different ages resemble each other as little. The human species, scattered over the face of the earth, is a large individual, whose life, of an unknown duration, is extremely long: the time of his education ought to be in the same proportion. This education is costly to Nature: she is obliged to resume it, at different periods, after an interval of several centuries. I shall content myself by quoting the instance of astronomy. This study began six thousand years ago; was cultivated at Babylon: it was re-commenced at Alexandria. Interrupted by a long series of barbarism, it was again revived in Europe. Who knows how many nations must succeed us, in order to perfect a branch of instruction so slow in its progress?

In the course of this long education, each period has its own portion of instruction; the ideas that correspond to it, and the discoveries that fall to its lot. Nature has impressed upon such things as follow in succession, an unalterable order. Truths of every kind are linked together, and we pass successively from one to the other; and if genius seems to take a flight, it is only to ordinary eyes, which cannot discern the intermediate chain of connection. M. De Buffon has observed, that the same plants, and the same animals, grow and live under the same latitudes.

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The Equator has the greatest degree of heat that regulates the functions of life. That heat diminishes, and blends with different colours the productions of the earth; from the climates always frequented by the sun, even to the pole, which this luminary sees at a distance, and but once a year. In the same manner, there are different degrees of maturity in the acquisition of knowledge; from the first step of the human mind, to that point where genius shall unfold every thing within its sphere. We have been going on for these fifty centuries past; we have hitherto seen no limit to that sphere. It cannot be doubted, that if in the duration of time it has fallen to the lot of any two people to traverse the same interval, these two people, arrived at the same point, might have, separately, discovered the same truths. But the characteristic mark of plants and animals of the same climate, is the power of continuing the species. When I see, in the menagerie of Versailles, an elephant that cannot produce another of his kind, I thence infer, that he is a foreign animal, born under a warmer sky. When I find in the hands of a people, a science which was preceded by no germ, and followed by no fruit, I must pronounce this science to have been transplanted, and that it belonged to a nation which had made more progress, and attained to a greator degree of maturity.

It is this important fact which convinces me that the people of Asia were depositaries, and not inventors. Besides, different considerations present themselves here, in support of this most legitimate conclusion. Let us suppose, that some strange revolution should one day destroy that state of civilization and improvement which presently exists in Europe; the libraries have perished, and there remains no trace of our history and sciences, but a few remnants and detached pieces, like those of antiquity: suppose that, after the lapse of many ages, a man, learned in general jurisprudence, should be desirous to study the laws of Europe: in these fragments he would see, with astonishment, a great number of similar laws among the Italians, French, Germans, &c. This lawyer, provided we suppose him equally a philosopher and a man of erudition, would not discover the source of this resemblance in the nature of man, constant in his appetites, uniform in his tastes, but infinitely various in his opinions, his judgments, and his institutions. He would learn in history, that those nations inhabited different countries; had each their own magistrates; that some of them were more free than others; that all of them were rivals; and if any one should venture to tell him that those laws were derivative, the philosopher would ask, by what charm they contrived to lay national jealousy asleep? By what superiority of power did they reduce men's

minds

minds to such a state of abject dependence, as that various nations should crouch under the laws of one foreign people? Such an adoption of a system of laws could not be voluntary; it must have been the effect of servitude. The philosopher would conclude from this analysis, that the inhabitants of Europe had been, primitively, subject to a people by whom those laws were invented; that they, by repeated and similar efforts, had overthrown the colossal power that oppressed them; and while they formed themselves into so many independent states, retained no badge of their ancient slavery, but that of the laws which they had been long accustomed to obey. The conjectures which I have presumed to hazard, are equally well founded with those of our philosopher. These, however, in the course of two thousand years, may become only probable, and possibly some may be inclined to regard them as an ingenious system: in our day, however, they are matters of fact. The people who are the authors of those laws, which have a certain similarity among all the nations of Europe, are the Romans; whose influence has survived their fall, and whose genius still lives in the maxims of our jurisprudence. But if our philosopher had reason to conclude that this system of laws was the work of one individual people; that the different nations who adopted them, could be no other than the wreck of that people's empire; the opinions of philophy, and the

the truths of science, which are of a different nature, seem to render my conclusion still more just. The physical subjugation of men is easy: the right of conquest imposes upon them the restraints of law; but the liberty of the mind remains unimpaired. Masters of our thoughts, we preserve the right of rejecting the opinions we dislike; and men but too often avail themselves of this right, in prejudice of the truth. A system of laws proves a unity of invention: the adoption, more or less entire, of this system, is proportioned to the power of the legislature; but a system of physics, or mathematical truths, a code of principles, besides that they prove a unity of invention, are by no means susceptible of being so easily and so extensively adopted. This would require a free and frequent intercourse; it would require a certain turn of mind, which nations derive from age and climate; and even when these circumstances concur, it would still require the effect of habit, and a long course of time.

America will present the world some day with the picture I have here delineated: the natives will throw off the yoke, and the colonies will separate themselves from the parent country, they will become a new people, and form themselves into independent states. Some of our institutions, however, will continue among them; usages of a European origin will be in common to them all; and the know-

ledge of physics and astronomy will be preserved in America: those branches of science which shall be found in too advanced a state to be the growth of infant communities, or of those who shall become the victims of indolence and the deprivation of genius, will afford matter of astonishment to him who shall weigh them in the balance of philosophy. Would it be wrong in a man, so circumstanced, to conclude, that these institutions and usages had belonged to a people who existed before them? Europe, perhaps, at some future period, may be as little known as the people of whom I converse with you at this moment.

The measures, Sir (the systematic composition of which I have already explained), appear to me very strong evidence of the existence of an anterior people. It has long been an object with our government (though they have been unable to accomplish it), to discover the means of establishing in France a uniformity of measures. How many ages, then, would it not require, before it could be made common to all the nations of Europe? How great must be the superiority of that people from whom the rest would condescend to adopt it! Indeed, in considering well the different nature of minds, and the rivality of nations, I cannot imagine a situation of things so favourable, nor a charm so powerful, as to engage the consent

sent of so many nations to take the law from a people of foreigners.

I observed, in a particular view, Sir, that the traces of astronomy among the different nations of Asia, carry us back to three thousand years before our æra. The identity of this epoch is a very remarkable circumstance. We have seen, that Fohi came to civilize the Chinese, and founded his empire in the year 2952. Diemschid, a stranger in Persia, as Fohi was in China, began his in 3209. The astronomical tables of the Indians, which appear to be founded on a chronological epoch, likewise ascend to 3101. These tables are the property of the Brahmans, who introduced their language, as well as their sciences, into India. From whence, then, came all those strangers, who offered themselves much about the same time, as the instructors of China, India, and Persia? Is it not natural to presume, that they arrived from the same country, with different degrees of information and science? I shall admit, if you please, that they came from three different countries, provided you will grant me, that those three countries were inhabited by an antecedent people, in whom was the source of this knowledge and refinement. If, in speaking of them, I adhere to the notion of one individual people, it is only to render the conclusion more simple. In fact, I cannot divest myself of the idea, that this people, like that of Europe, consisted

of different nations, who had their respective languages, and were in different stages of civilization and improvement.

If any one chooses to adopt a conjecture hazarded before me, by well-informed travellers, who have visited all the different parts of Asia, that the *Xaca* of the Japanese, the *Sommona-rhutana* of Pegu, the *Sommona-kodom* of Siam, the *Butta* of the Indians, are but one and the same character, regarded here as a god; there as a legislator; if he will join to this conjecture that which I have suggested, and which assimilates this *Sommona-kodom* to the *Tien* of the Chinese, and to the uncreated heavens of the Persians; if I shall have proved to his satisfaction, that Butta, *Thoth*, and Mercury*, are, in like manner, one and the same inventor of the arts and sciences—it will follow, that all the nations of Asia, ancient and modern, have had, in respect of philosophy and religion, one legislator only, who was co-existent with their origin. I must then take the liberty to observe, that this identical legislator† could not visit all parts of Asia at once, nor

* I have observed, that the Brahmans loved the appellation of Permanes. M. Gebelin adds, that Mercury, according to Pausanias, bore the name of Paramon. This ingenious remark is a complete proof of what I have announced respecting the identity of Butta and Mercury. See M. Gebelin, Preface de l'Hist. du Calandrier.

† Whether this legislator was actually a benefactor of mankind, or merely a fictitious and allegorical character, has nothing to do with the present

nor indeed at successive periods (as I presume he was not endowed with the gift of flying); since the life of man would not suffice to perambulate and instruct that vast continent. All the nations of Asia have preserved their veneration for his memory, and contemplate him still in the commencement of their existence as a people, because they had one common origin.

Were we to suppose, that in this long list of conformities, that are not to be disputed, one should be found, which ought to be placed to the account of national intercourse, or which has a necessary affinity with the constitution of the human mind; there would still remain a sufficient number to form a volume of evidence: one alone, established in proof, would be sufficient to warrant my conclusion. Those conformities themselves are not essentially necessary; and, indeed, we may regard them but as so much additional evidence. The existence of an antecedent people, is sufficiently evinced by the picture I have drawn of the nations of Asia; a picture which exhibits an absolute wreck; a system of astronomy now sunk in oblivion; a pure religion, but concealed under a gross idolatry; invention every where, but not progressive; and, what is

present question: it is enough, if the memory of that primitive benefactor, or the tradition of that allegory, accompanied the different colonies, and was disseminated by them over the greatest part of the world.

still worse, the natural progress of the human mind not only stationary, but retrograde. This superficial survey, Sir, will suffice to a philosopher of your eminence, as proof of the existence of that people who instructed all others; besides, I cannot conceive that this idea implies any thing extraordinary. When I look to the present generation, I naturally conclude that it is following another that is past: it seems equally natural to me, that one people should have succeeded another, and that your friends the Indians, are the heirs and successors of a nation more powerful and enlightened than themselves.

I am, with respect, &c.

SEVENTH LETTER TO M. DE VOLTAIRE.

[This ancient people had the sciences in a highly perfected state, with wise and sublime systems of philosophy.]

Paris, 12th Sept. 1776.

" I HAVE said, Sir, that the people who in ancient times swayed the sceptre of science in Asia, were the authors of all those philosophical ideas which have enlightened the world. I have asserted, that they possessed the sciences in a state of high improvement, and a wise and sublime philosophy. This idea has been deemed bold; and though I have had the satisfaction to see it pretty generally adopted, it has met with men more incredulous. It is not you who have thus called it in question: you have too distinct and luminous a conception of the history and vicissitudes of the world; you know, that whatever is possible in the succession of things, whatever may happen in times to come, may have happened in times past: philosophy is not free from excesses and contradictions. At one time we contend that all men resemble one another, in spite of the differences of

times and climates; at others, we believe that ourselves alone are capable of certain exertions. The true light, according to some, shines only in our days: they confound the periods of antiquity, removed at different intervals from the infancy of the world; and if they should be disposed to excuse the stupidity of those times, they can see nothing in them but darkness and ignorance. But the ignorance rests with us, who do not know them: the darkness is that of distance, which gives objects a dusky hue, at the same time that it contracts their dimensions. We are deceived by the high value we set upon ourselves: we fancy we have reached the top of the ladder, while we are by no means so far advanced: we suppose, besides, that nobody ever got to the same height before us, because time, which sweeps away human beings, effaces also their traces.

Can we suppose, that an opposition to the idea of an ancient highly perfected state of science may arise from a sentiment of jealousy? Surely our age is too enlightened: Europe witnesses at this day, the most brilliant epoch in the history of the sciences. Of what importance is it to the present, whether it has been preceded by some similar epoch? Even our own success gives countenance to my hypothesis. You will acknowledge, Sir, that what we have done, others may have done before us. If the immortal compositions of the minstrel of Greece had no existence,

istence, M. de Voltaire, after describing the battles and triumph of good Henri, could conceive that Homer might have written the Iliad, and justly merited all his fame.

Though my opinion, respecting the ancient state of the sciences, does not displease you, give me leave, Sir, to enter here into some detail. The detail I offer, may perhaps appear foreign to the history of astronomy; it may exceed the bounds I myself would have wished to allow it; but I have said, that the wreck of that ancient destroyed state of things, implies a wise and sublime philosophy. I ought to make good this assertion.

When destitute of the light of revelation, is it possible for man to acquire a greater or more just idea of the Supreme Being, than that which presents itself in this philosophy? Sublime, because it teaches that God is one, every where present; that he created all things, gives life to all things, and is alone eternal and unchangeable; because it distinguishes the three most prominent acts of the Divine Power; the acts of creating the world, of preserving it, and of destroying it at last:—wise, because it at the same time admonishes us that God is ineffable; because it forbids us to indulge the idea of sounding the depths of his essence. But, Sir, have I not reason to believe that this people was highly enlightened, when I find in the ideas of Plato, a respect for the ternary number,

ber, evidently derived from the three acts of the Divine Power; the idea of unity constantly added to itself, representing the image of one God, multiplying himself in all the diversity of beings, and by his presence giving a repetition of himself in every successive point of space? When I see Malbranche, a distinguished philosopher of the last century, teaching us that we see all things in God, and arrived, with the assistance of metaphysics, at the idea of the Indians, who say that the world is only an illusion, presenting in every thing that is the object of sight, but one real and individual thing, the existence of God,—these ideas, no doubt, in themselves, are merely visionary: but, in short, Plato has obtained the reputation of depth and eloquence; Malbranche discovers great riches of genius and imagination. Wherever I shall see Plato and Malbranche united, there I shall be obliged to give place to depth, subtilty, and genius.

If these metaphysical ideas of eastern nations have degenerated into a pure materialism, perhaps this is the lot of human reason left to itself, and without a guide. Not knowing the limit where he ought to stop, man soars from matter to the Supreme Being, placed at the summit of the circle of his knowledge; and this fatal error lies in the way of his return, as he re-descends towards Nature. We ought to deplore the reasoning of the atheist; but we must not confound

found him with the brute, bending towards the earth, without eyes to perceive his author. They are two men who fall into the same pit; one blind, the other an astrologer; one, because he sees nothing; the other, because he would see too much; or, as the figure of blindness is more applicable to the atheist than to any other, it is a blindness which is owing to his fondness to contemplate the sun, before which he ought to cast down his eyes.

Materialism chains down the human mind to the general motion of the universe; and the idea, that events, characters, effects, and the evils of men's passions, return with the periodical revolutions of the stars; in one word, astrology is nothing but a certain application of this system. The errors of antiquity, then, were learned and profound. I am hence warranted to believe, that the idea of the circulation of matter, and that of Nature reduced to two elements, were, in fact, but one and the same physical system, wrapt up in the dogmas of metempsychosis, and of two principles. We must keep in mind, that philosophy is the result of all the sciences, in a state of equal improvement; and if the human mind be (what it cannot be doubted it is), an instrument, which, far from becoming obtuse, is sharpened by use, the science of metaphysics is its most acute and subtile point. The exercise of reason in philosophy, and the abuse of genius in metaphysics, as they imply,

ply, so they give proof of much preliminary knowledge.

Is it not to this philosophical spirit of inquiry, that we owe the opinion of the return of comets (an opinion which was not acquired, or rather revived, till modern astronomy had been considerably perfected); the conjecture which resolves the white appearance of the milky-way into a vast cluster of stars, insensible to the naked eye; the discovery of mountains in the moon; the bold idea, which, after assigning inhabitants to this planet, not content with this flight of conjecture, proceeds to people all the luminous worlds in the heavens? But of those ancient discoveries, the most astonishing, undoubtedly, to a reflecting mind, is that of the true system of the universe. How was it possible to carry the conviction of it to the minds of men, who see the sun in motion, and feel the immobility of the earth? How could it reach the understanding of men, always guided and deceived by their eyes? Those ideas are not the inventions of the Greeks; a people who were unable to regulate the period of their year without the assistance of Egypt and Chaldea: they all suppose experiments which the Greeks never executed. Various essays must be made, systems hazarded and refuted, in order to make room for other systems. How many systems may we suppose have been swallowed up in the ocean of time! How many do ages of light and

science

science suffer, to go down to posterity!—Those truths, those philosophical ideas, which have stood the test of time, which still maintain their reign among men, owe their better fortune to that superiority of genius which produced them, and to the examination they have undergone in the face of the sun: they could have arisen, then, only in a most enlightened age, eminently distinguished for the cultivation of science, and for a philosophical spirit, to which that cultivation gives birth.

These observations, Sir, have confirmed me in the idea which the picture of oriental astronomy suggested to me. But, at the same time, the union of so many branches of astronomical science, of equal antiquity, and the view of those fragments which attest the existence of a great edifice, carry those probabilities, I venture to say, the whole length of demonstration. In fact, the Zodiac could not be divided but by a learned people. This division requires study and research. The twelve signs are divided, first, into three, then into nine, among the Egyptians*. The twenty-eight constellations of the Zodiac are also distributed into four smaller ones, among the Indians†. This division is more ancient than either the Indians or Egyptians; but though it were not of a more remote antiquity, the coincidence of

* Hist. de l'Astr. Anc. Bailare. lib. ix. sec. 24.
† Ibid.

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sub-divisions, which equally produce a hundred and eight small constellations, would suffice to place it at the common origin of the two nations. The adding a day, anciently, in Asia, every four years, as we do in Europe, since the time of Julius Cæsar, in our bissextile years; the period of nineteen years, which we have thought worthy of being preserved in our calendar; the period of six hundred years, so much admired and celebrated by Dominique Cassini;—do not all those inventions demonstrate a sufficient acquaintance with the motions of the sun and moon?—The length of the year, implied in those periods, is extremely near the truth; but if it was erroneous by two or three minutes, Hypparchus, the father of modern astronomy, has added to that error four minutes more. In order to have it corrected, in order to know the actual duration of the solar year, we were to expect the coming of Dominique Cassini: it required an interval of nineteen hundred years, and two great men at each extremity. Those beautiful and difficult institutions could not be made in ages of ignorance: they are the fruit of genius; they are the labour of an enlightened age, whose rays are intercepted by the lapse of time, like our view of objects by the map of the atmosphere.

I will recall to your recollection, in the following letter, the reasons which induce me to attribute to this age, the discovery of a motion by which the

stars

stars seem to move slowly along the Ecliptic: this discovery, however, is not more astonishing than the institution of those periods, than the accurate determination of the solar motion. Hypparchus knew it but imperfectly; though he discovered the motion of the stars. But what, above all, has the air of paradox, is a measurement of the earth, attributed to this people, with a precision to which we moderns have been able to add but very little. But, Sir, if, as I believe I have, shewn, with the most perfect evidence, those three things, first, that the ancient determinations of the earth's circumference, with the exception of that of Eratosthenes, are merely copies of one single original; secondly, that this original contains a very considerable degree of accuracy; thirdly, that it could not possibly belong to any people known in antiquity: we are under the necessity of assigning it to those whose memory is preserved in the remains of their astronomy. If you will take the trouble to consult astronomers, they will inform you, that those three branches of this science are of equal difficulty. They are linked together in such a manner, as that one supposes the knowledge of the other; and as they require the same efforts, the same instruments, and the same genius, it is natural that they should belong to the same ages. Besides, as each contains its own degree of probability, those probabilities accumulate, strengthen the evi-

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dence in the same proportion, and become in their united force, a complete proof of the existence of a great people, in possession of a profound system of science. This opinion, I know, appears to you, Sir, very probable: I venture to hope it will soon be received and embraced as truth; and I flatter myself I have made the discovery of an important fact; the knowledge of which must have an effect upon the study of antiquity.

A critic will tell me, perhaps, What imports it to know the route pursued by science, or the people who enlightened the rest of mankind? But I will appeal to your tribunal, and ask him in my turn, what is more curious or interesting to the mind, than the history of nations in general? If I except the history of my own country, which has a peculiar interest, that of national vanity, all others are foreign to me, and tiresome, from their mutual resemblance: their history is a tissue of tragedies, in which the actors are the same, and the winding up of the piece similar. Shall I, a Frenchman as I am, take an interest in reading the history of Rome, which no longer exists; shall I be curious to see in one country the convulsions of liberty; in another the enormities of despotism; and shall I remain insensible to the history of science, resulting from the improvement and operations of the mind, which is the most valuable part of my existence! And, after all, it is

my

my own history; since it is that of man. Why have not those who, in different ages, have been born with superior talents, not entertained the same ideas, nor attained to the same truths? I rank higher in these days, by my acquirements in knowledge, than many men of celebrity, in former times, by the excellence of genius. The reason is, that the age in which I live, raised to distinction by those very men, has placed me above them. Shall I enjoy that advantage, without knowing by what steps the thinking substance within me perfected itself? We follow Montesquieu with pleasure, as he unfolds the causes of the grandeur of the Romans: and shall I not be curious to learn by what gradual opening of the faculties, the human mind acquired that pre-eminence in which I participate, from the accident of my birth? But the fortune of the Romans is imposing, by that character for grandeur, for virtue, and for courage, which was peculiar to themselves; and above all, by the influence they obtained over almost the whole universe, which submitted to their arms. I would ask, what is there more imposing than the mass of knowledge and discoveries of the human mind; than the result of all the efforts and resources it has employed? For a being, weak, limited, placed upon a globe as limited as himself, what is there more noble (in one view, by the importance of the object, in another, by the apparent smallness of the means), than

an attempt to subjugate the physical universe;—the universe, the extent of which denies itself to our senses, and reveals itself only to our thoughts? Do the conquests of the Romans present us with any thing more sublime? Is the edifice of their grandeur more astonishing than that of human knowledge? The Romans conquered a part of one world; the mind of man has made a conquest of them all: these worlds constitute the different provinces of the universe. From the provinces which the sun and moon occupy and traverse, it proceeded to those of the higher planets: the satellites discovered since, have submitted to the law of the conqueror; it forced the comets, on their passage, to pay it tribute; and it has annexed the wide extent of their course to its domains. These conquests have cost no blood, nor tears to humanity; on the contrary, humanity has been aggrandized by their means. Is, then, the order of these conquests, the establishment of this empire, of so little moment, as to excite no interest in our minds?

But if man is curious to number the treasures amassed to his hand, to know, by the amount of their riches, what he himself is worth; of what importance is it, whether that riches be due to this or to that people? And what business have we to inquire, whether the Chinese and the Indians were preceded by a people more enlightened than themselves? What,

Sir,

Sir, shall we set a high value upon the knowledge of political revolutions, and shall the progress of light and science be a matter of our indifference? Shall we be careful to teach the youth the succession of ruined empires, of kings almost fallen into oblivion; and can we see no use in making them trace the path of our sciences in Asia, before their arrival in Egypt, in Greece, and, by her means, in the countries of Europe? Is there nothing curious in the inquiry, whether the nations we know were the first enlightened? And is the revolution which plunged the world into darkness and barbarity, after the reign of philosophy and science, worthy of but little notice? The progress of the human mind, matured by the cultivation of its faculties, then arrested, benumbed, and overwhelmed in ignorance; again opening its eyes to the light, in consequence of its successive labours—this historical view of man gives me pleasure. Power is estimated by the obstacles it is in condition to overcome: the reparation of losses, conveys to me the idea of greater strength of genius: one continued series of efforts, would inspire me with less admiration. The sun never appears with more majesty, than when he darts his rays in the midst of clouds, which he disperses around him. I admire the human race, above all, when it awakes to action: I love to contemplate its industry, engaged in an unremitting

remitting struggle with barbarism; at one time succumbing under the ponderous mass which overpowers it; and at others, disembarrassed by its exertions, and rising again by the spring of its native elasticity.

The critic will be alone in his opinion: you will be with me; you, Sir, who have been the first to regard the human mind as of some moment in the history of mankind. We will turn our eyes from those dismally monotonous annals of passion and of vice; we will repose our thoughts on the essays of reason, and the progressive displays of its strength; and we will conclude, that the quiet path of science is more interesting than the footsteps of the conqueror.

I am, with respect, &c.

EIGHTH LETTER TO M. DE VOLTAIRE.

[This ancient people seem to have lived in Asia, about the parallel of 49°. It appears, that the light of science, and the population of the world, extended themselves from north to south.]

Paris, 14th Sept. 1776.

"IF I have been the means of reviving the memory of an anterior people, and of recalling the idea of their existence, I persuade myself I have exhibited nothing but what is truth. Let us proceed, Sir, to an opinion which I suggested as a matter of high probability; I mean that of the sciences having descended from the north to the southern parts of Asia. This light I have not been to seek in the country of the *aurora borealis*: I have met with facts, which satisfy me that it might have first shone under the parallel of from 49° to 50°: I have thought that this climate may perhaps have been the habitation of a lost people, whose knowledge has been transmitted to their successors. Is this idea, then, so very strange? We have still in Europe, countries in the south, where the sciences are but little cultivated: if, in

those places, they shall one day make some progress, the light must descend to them from the North. And would what is possible, and even natural, in Europe, be ridiculous in Asia?

This opinion has against it a received prejudice; an idea which has got the sanction of ages; and that is no small matter. Men believe, and they have always believed, that the earth was peopled, as well as enlightened, from south to north: nay, I will say more—they had a right to believe it. It was natural to suppose, that the first of our race chose the place of their abode in the most beautiful climates; it was equally natural to imagine, that the sciences, and above all, astronomy, had their origin in those fine climates, and under the favour of their serene nights. But what is most natural, Sir, is not always what is truth. Whence arises prejudice? From an appearance that has not been examined; from a glance of the eye, cursorily thrown on the surface of things: the truth lies under that surface: when it presents itself to view, it is not known: it is despised by prejudice, which has usurped her place. Was it not visible, that the sun performed his revolution round the earth in the space of a year? Was it not also visible, that this luminary, and the stars that appeared after he went down, made the tour of the globe in twenty-four hours, and rose in the east, for the purpose of affording us light by night, as well as by day?

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This idea was so natural, that it was actually the belief of many ages. It was, notwithstanding, not true; and we were turning round every year, and every day, while we gave but a very indifferent explanation of the motions of those stationary bodies.

Let us have candour enough to confess it, Sir,—a man's first view almost constantly deceives him: though the opinion founded in this first view should be plausible, from being little examined, and never contradicted, when the hour of examination arrives, it will generally be found false. I do not mean to say, by these reflections, that an opinion contrary to mine, is of that description; but they will warrant me to express some doubts. It has been said, man originally had a free choice: he was master of the whole earth, when still almost desert: he must have chosen his residence on a warm and fertile soil. I am aware, that when we take possession of a house, we choose to live in the most convenient apartment: but men were not so absolutely free as we suppose them; they were born under that region of the heavens where Nature, where the hand of God, placed them: those heavens were always serene, and that native country always dear to their affections; and when an overgrown population forced them to disperse, they quitted it with regret; which gave rise to the fable of the golden age. I easily conceive how men should descend from the mountains of Tartary,

and withdraw themselves from the asperity of those cold regions, to breathe the more kindly influences, and to inhabit the fertile plains, of India. Terraces, where we can sleep sound under the pavillion of heaven, are much more desirable than huts immersed in snow, and suffocated with smoke. These new enjoyments weakened the regret, as well as the remembrance, of their native land. But I cannot so well understand how population should diffuse itself in a contrary order. After passing a fine summer, winter gives me considerable pain. I was born under a sun almost constantly vertical: I could not reconcile myself to embrace, in a mountainous country, such short summers, and severe winters. What would the youth have said, destined to quit harvests that cost them no labour, for a frozen soil, incapable of cultivation; to put on furs, in place of going half naked, and to acquire the habits of a wandering and active life, after the idleness and effeminacy of their first years? I should not be fond of proposing to the natives of Provence, to go and take up their residence at St. Petersburg: nor do I imagine that the inhabitants of Bologna and Florence will ever emigrate towards the Glacieres of Switzerland, unless it be to have the advantage of your instruction. The Swiss, however, if it were in their option, would very cheerfully descend into the plains of Italy. The Gauls, in former times, shewed a desire to exchange countries

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with the Romans, or rather, to extirpate them, to prevent disputes. A man never offers to barter, but in the hope of gain; nor wishes to change, but in view of something better: and if the exiled youth had found themselves badly appointed, it seems difficult to conceive that they should not have returned to their own country. They would have had recourse to the expedient of cutting each other's throats; and destruction might have operated, as in our own days, so economically, as that there would only have been as many inhabitants left, as the country was in condition to maintain. This policy would not have tended to the over-rapid advancement of population; and the fine countries alone would have been deemed worthy of being inhabited. But if we suppose that population began towards the north, it is easy to imagine, that like waters which accumulate upon the mountains, and which their gravity forces to descend, men, impelled by the necessity of subsisting, and invited by a warmer sky, deserted the high latitudes, to animate, by their presence and industry, countries in the vicinity of the Equator.

I do not know if I impose upon myself: you will inform me, Sir: but are not those ideas more just and reasonable than any thing that has yet been said on the ancient progress of population? History is silent upon the subject; and this ought to be expected.

pected. When history began to be written, emigration had ceased, population had acquired a certain level, and the earth was peopled. History commences only with the building of cities: it speaks of the abodes of men, and not of their travels. The vestiges of those travels, however, have been preserved by tradition. History itself throws some light upon them, wherever it treats of the fabulous ages. The fable of the golden age is the tradition of travels, and of a first abode; the object of regret in a new settlement. The natural train of ideas, Sir, which I have just submitted to your view, is established by facts. We know of almost no irruptions but those of the people of the north*. It would not be difficult to prove, that the greatest part of the nations of Europe are the remains of those irruptions. I will not pretend to affirm, that the earth has not had other inhabitants: I will only say, that those men, superior in strength and courage, made a sort of universal conquest, altered the nature of every thing by

* We find on the coast of Malabar, the custom of trial by fire, exactly similar to that which, not very long since, existed in Europe (Hist. Gen. des Voy. tom. xlii. p 306)—It was introduced by the Goths; the Goths, who with the Huns and Vandals, over-ran and and ravaged Europe for so long a period. The Teutons and the Getæ made irruptions from the north before them. These Getæ settled near the Danube; of Scythian origin, according to M. D'Anville; had a pontiff, supposed immortal, like the Dalay Lama of the Tartars.—Mem. de l'Acad. des Inscr. tom. xxv. p. 45.

their

their mixture, stamped every thing with their own institutions*; and that the character and genius of the present inhabitants are formed from their manners, changed and modified by the influence of time, climate, and government.

M. Gebelin, in his ingenious and profound work on comparative grammar, has found common roots, which connect the living languages of Europe with the ancient languages of Asia; the ruins of a primitive tongue, which was the source of all others. M. L'Abbé Bannier makes the Atlantes descend from Scythia: M. Mallet refers the origin of the Danes to the same source. Both those learned men have remarked a singular resemblance between the doctrine of the ancient Persians and that of the Danes and Celtic nations†.

After what has been said of the difficulty of communication, we shall scarcely suppose that the Druids quitted their forests two or three thousand years ago, in order to go to school under the Brahmans, or the Magi; nor that these came to make a visit to our ancestors. It is probable that the world was peopled

* M. De Voltaire himself has found in the north, and in Tartary, the origin of the feudal government. That ingenious view of history, shews that the government of almost all the nations of Europe; that that Hierarchy of nobility, which has had so much influence on manners, was the work of the northern tribes.—*Essay on General History.*

† M. L'Abbé Bannier, la Mythologie et les Fables Expliquées, tom. ii. p. 25, and 628.—M. Mallet, Introduct. à l'Hist. de Denmark.

or

or conquered by the inhabitants of the north of Asia, who extended themselves, in every direction, eastward, to the west, and above all, towards the south.

When I speak of the north of Asia, I do not pretend to assign any particular degree of latitude; I only mean the countries north from China, India, Persia, and Chaldea. Why should not that northern people, who directed their incursions into Europe, almost uninhabitable from its woods and marshes, be tempted to try their fortune in the south of Asia, which promised them richer conquests, and of easier acquisition? It is evident, that the tide of emigration would run more naturally that way: the invaders would never turn their eyes towards Europe, till they found Asia strong in population, and a resistance which forced them to seek their settlements in a different quarter.

The reflections which I made, Sir, in the beginning of this letter, upon the progress of population, and the resemblances which refer all nations to one common origin, render this conclusion inevitable: besides, probability, as well as tradition, lend it all their support. The Tartars, twelve hundred years before Jesus Christ, peopled the islands of the eastern ocean. Kempfer observes, that the Japanese and the Tartars have the same warlike genius, the same intrepidity of mind, and contempt of death; and he thinks, that if we would define a Japanese properly,

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we ought to name him a civilized and well-bred Tartar*. Does not the veneration of the Indians and Chinese for certain mountains of Tartary, give a strong indication of their first abode? This is not all: Mendes Pinto relates, from a Chinese chronicle, the history of a princess called *Nunca*, who laid the foundation of the city of Nankin, to which she gave her name. This princess came with her three sons six hundred and thirty-nine years after the Deluge, from a country situated under the 62° of northern latitude†. This tradition has much of the air of fable; but how unfounded soever it may be, it evidently contains the opinion of the Chinese respecting the question of their origin. When I had occasion to speak, Sir, of the libations practised in China, I said, that they turned their face towards the north pole, to make libations in honour of the dead. When we consider the veneration of this people for the memory of their ancestors, we conceive but one natural interpretation of this usage; I mean, that the Chinese turn themselves towards that quarter of the globe where is the place of their nativity, and where their forefathers are at rest.

These small facts, by a singular coincidence, tend to the same point, and unite their evidence in favour of my opinion. In fine, Sir, there is not one of those

* Hist. des Voy. tom. xl. p. 48.

† Ibid. tom. xxxv. p. 165.

Asiatic

Asiatic nations Aborigines: they must have come, then, from somewhere; and since Fohi, Diemschid, the Chaldeans, and the Brahmans, were strangers to the different countries where they settled, we have some probability for believing, that they emigrated from the same country, and that that country is Scythia.

I have had communicated to me lately, a singular observation of the celebrated Linnæus. He remarks, that several of our plants and vegetables *, unknown in ancient times, grow spontaneously in Siberia, and were not cultivated in Europe before the invasion of the Goths, who, no doubt, imported them along with their architecture. M. Linnæus adds, that, according to M. Heinzelman, wheat and barley grow naturally in Russian Tartary, and that the inhabitants of Siberia make bread of rye which is found in a state of nature, and without being sown †. This able

* Such as the hop, mugwort, and spinage, &c.

† Ita, Heinzelmannus invenit in campis Buschkiriorum triticum æstivum et hordeum distichum sponte crescentia. Secale cereale spontaneum Sibirienses coquunt in panem. Videtur mihi itaque posse concludi Sibiriam fuisse eam, ex qua forte omnes post diluvium exiere mortales, et late dispersi sunt, quoriam hæc in regionibus, extra Tropicos, primaria inveniuntur alimenta.

This fact is found in a dissertation of M. Linnæus, printed at Upsal, in 1764. I do not know whether it has been published: it had not yet appeared in 1768. The passage I take notice of, is quoted in a work printed in 1768, and entitled, *Probe Russischer Anulen*, de M. Schlœzer, professor at Gotenguen, p. 45, 46.

botanist

botanist concludes, that Siberia might be the country from which men issued after the Deluge, to spread themselves over the rest of the earth; since this is the only country which produces the first food of man in a civilized state*. To that hour, the real native country of corn was unknown. This plant, so precious to the life of man, is not a production of our climates. It is, then, natural in Tartary, in the same manner as pepper is in the Moluccas, or coffee in Arabia. But it will then follow, of course, that it was introduced by the northern tribes: the almost universal use of wheat and bread, is a clear indication that it descended from that people to the rest of mankind. If the use of it does not obtain in India and China, it is because those nations have found a species of food of equal excellence; I mean rice, which is a native of the same climate, and which affords them different crops with little culture.

We can have little difficulty to admit the vast population of a country which has so largely contributed to that of every other. Jornandes observes, that the North was the nursery of the human race—*officina generis humani*. That population, besides, discharged itself in successive swarms, and with the

* This is undoubtedly a very singular fact. It is not confirmed by any traveller who has visited Siberia. If I am not mistaken, M. Gmelin takes no notice of it; but it is stated by M. Linnæus: I quote it on the authority of this celebrated botanist, and with that confidence which is due to him.

progress

progress of time, according as new generations arose and overstocked the country. Nature is prolific: she has the strongest propensity to produce; and population is proportioned to the means of subsistence. In our day, when men are pressing one upon another, if I may say so, each must live upon his own territory. In spite of the impulse of Nature, one want controuls another, and suffers the production of so many beings only as can be supported; but when the earth was open, and settlements might be multiplied at pleasure, Nature had full and free scope. This population of the north is proven by sufficient documents, by the frequent irruptions, by the numerous armies, which desolated and conquered all the countries of Europe.

We might confirm those facts still farther, by a conjecture. Nitre, which we employ for such deadly purposes, is rare in our climates: its production is slow and difficult: it is in the Indies alone where it is found in abundance; and all of it is formed on the surface of the earth. Father Verbiest, travelling in Tartary, north from the great wall of China, astonished at the violent degree of cold that prevails in those regions, accounted for it at first from the great height of the land; but he came to imagine, that the cold derived much of its severity from the vast quantity of nitre which lies upon the ground *. Nitre is

* Hist. des Voy. tom. xxv. p. 40. tom. xxvii. p. 395.

only

only produced in the habitations of men and animals: it is in living nature that the process is carried on: it is in the corruption of vegetables, and animal carcasses, whether of men or of beasts, that fermentation generates and ripens this substance. Among us, it is usual to visit our most ancient buildings, in order to collect it: it is carried off and consumed as soon as it is produced. But in the fields of Tartary, where the invention of gunpowder was yet unknown, it might remain and accumulate with the progress of time. It is found in India, in certain places which were anciently inhabited*. I consider, then, those masses of nitre, or saltpetre, as the traces of a large population, and as the monuments of human habitations; for the same reason, that banks of shells, and mines of salt in the bowels of the earth, are admitted to attest the abode of the sea.

Moreover, Sir, it is only to add to the sum of probable evidence, that I contend for this vast population in the countries of the north: it is not necessary to my object. Although it should seem that mankind, in peopling the earth, ought to have advanced towards the sun, and not to have retreated towards the poles; I have no want even of this supposition, or rather, of this fact. Men are at liberty to people the

* *Thevenot* says, that nitre is found particularly towards Agra, in certain villages formerly inhabited, but now entirely deserted.—See the second part of his voyage.

earth as they may think proper: the route of population does not absolutely ascertain the progress of science: they may object certain supposed resemblances: I maintain facts. The first is supported by observations upon the rising of the stars; observations which were made under a climate of sixteen hours, and collected by Ptolomy. Europe, at that time, had no astronomers under this climate: they are, therefore, observations made in Asia, and even as far north as Tartary. The second is taken from a book of Zoroaster; where this philosopher, describing the country, the situation of rivers, mountains, the regulation of time, the succession of the seasons—says, that the longest day of summer is double the shortest day of winter. This phenomenon marks the climate of sixteen hours: it is still that of Tartary. It would be not a little singular, if Zoroaster, writing in Persia, and for the benefit of the Persians, had described, without giving them notice, a climate so remote from himself, and to which, unquestionably, he was an entire stranger. This is not a discovery, Sir, as you seem to have imagined; it is an observation, related in the simplest manner. We do not find the theory of the sphere in any of the Asiatic nations; nor even among the Greeks, their imitators. The phenomena of the different length of days were so little known, that long after, when Pitheus returned from his travels, and which he reported that he had

seen countries where the sun never sets in summer, he was treated as an impostor: he had made the observation, but they would not believe it. It follows as a necessary inference, that Zoroaster had collected certain memorials, drawn up in the country of which we are speaking. They contained a description of that country, and of the wisdom of its inhabitants. Hence it appears, that the science with which Zoroaster enlightened Persia and Chaldea, was derived from a higher latitude.

A third fact is so naturally connected with the two first, that I cannot avoid stating it here. You know, Sir, that the flattening of the sphere at the earth's poles, was a theoretical discovery: it is the glory of Newton: it was that of the French academicians to proceed to the two extremities of the globe, in order to ascertain the idea by experiment. From this it follows, that the degrees of the earth increase, from the Equator to the Pole. The degree which we measured under the Polar Circle, exceeds, by about seven hundred fathoms (of six feet), that which we ascertained under the Equator. The degree, measured in the environs of Paris, by M. Picard, is a mean between the two. I mentioned to you before, a measurement of the earth's circumference, reported by Aristotle, which could not have been executed by the Greeks, nor by any nation we know: the degree which results from this measurement

is precisely equal, or at least with a difference not exceeding six fathoms, to that which was measured in the vicinity of Paris; and which corresponds to a latitude of forty-nine degrees. All these facts, then, lead us back to the same conclusion; they seem to bear witness, that that ancient people who perfected the sciences; the people who, in days of old, executed the important task of obtaining an exact determination of the earth's circumference, lived under the parallel of forty-nine degrees. If the human mind can at any time flatter itself with having discovered the truth, it is when a number of facts, and facts of different descriptions, unite in pointing to the same conclusion.

There is another fact, no less singular; I mean, a tradition which the Indians have preserved, of two stars diametrically opposite, which perform their revolution round the earth in a hundred and forty-four years. This tradition, no doubt, had its origin. How great soever the ignorance of the people, they could not possibly have had in their eye the revolutions of any of the planets. As to the motion of the stars along the Ecliptic, it was, no doubt, long unknown; but from the moment of its discovery, its slowness could not admit of men's giving it so speedy a revolution; nor could the Indians be misled by this motion, which they know, and which is completed, according to them, in twenty-four thousand years. It must be

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presumed, then, that those hundred and forty-four years were not solar, and that by this term we are to understand some longer period, agreeably to the usage of the ancients, who had a generical name to express every kind of revolution. Now, we find among the Tartars a period of a hundred and eighty years, which they call *Van*. A hundred and forty-four times a hundred and eighty years, make exactly twenty-five thousand nine hundred and twenty years. This is the true revolution of the fixed stars, as deduced from the most accurate of our modern observations. Chance never produces resemblances like these. Besides, the word *Van* has nothing strange in it in India; it is found in the language of Siam, and signifies a day, that is to say, a revolution*. We may therefore conclude, that the Indians, previously to the knowledge they have at present, of the motion of the fixed stars, had another system on the same subject, more exact, which is lost in the obscurity of their traditions; and that those traditions belong to their origin, to the country where the period of a hundred and eighty years is still in use, to the country, in fine, whence the word *Van* passed into their language.

I have here adduced four very material facts: men will explain them as they please. I shall not resist any natural explanation; but in the mean time, till

* Hist. Gen. des Voy. tom. xxxiv. p. 360.

we receive it from the learned, the opinion, that those people, their knowledge, their science, descended from the north, appears to me the most probable and legitimate conclusion.

The pilgrimages which the Indians make to the Pagoda of the Grand Lama, and into Siberia, seem to me, I own, another proof of the truth of my opinion. These devout peregrinations are too long and painful, not to have originated in some powerful motive. This motive I consider as an homage which the piety of the Indians renders to the country whence they had their origin. Had an Indian seen the Europeans cross themselves; a crowd of pilgrims setting out upon a painful journey, either to conquer or visit Jerusalem; he would have concluded, that this city is the seat of a venerable worship.

To the facts I have just stated, Sir, we might subjoin fables; and fables singular enough to merit some attention. The most remarkable is that of the phœnix. This bird, according to the ideas of the Egyptians, is one solitary individual: his plumage is of gold and crimson. He comes from a country of darkness, to die in Egypt, and to rise again from his ashes in the city of the sun, upon the altar of that divinity. It is impossible to doubt that the phœnix is an emblem of a solar revolution, which revives in the moment it expires. If any one questions the truth of this, he will find the proof of it in those authors

who

who assign to the phœnix a life of fourteen hundred and sixty-one years*; that is to say, the time of a Sothic period, or of a revolution of a great solar year of the Egyptians.

We read in the Edda of the ancient Swedes, a similar fable: they there describe a bird, whose head and breast are the colour of fire; the tail and wings of a sky blue: he lives three hundred days; after which, accompanied by all the birds of passage, he flies into Ethiopia; there makes his nest, and burns himself, with his egg: the ashes produce a red worm, which, after having recovered his wings, and the form of a bird, resumes his flight towards the north. Certain learned men, though of small number, have found no resemblance between the phœnix of the Egyptians and the bird of Edda: I mean to repel no criticism: if there is any truth in my work, it will defend itself. The detailed illustrations which I submit to your eye, Sir, will serve, perhaps, to set the truth in a stronger light. It is you I am labouring to convince; and you will not deny this resemblance. Only you believe that the fable of the phœnix was an invention of the Egyptians: I pray you will consider it once more. The resurrection of the phœnix is by no means a natural idea: we see beings of all descriptions disappear around us; nor have any the privilege of returning back to life. Man may envy

* *Horus Apollo*, lib. ii. ch. 57.

some animals a longer life, superior strength, more exquisite senses; but was it possible for him to create on purpose an imaginary being, and invest it with a prerogative which belongs to none of the productions of Nature? This prerogative, therefore, is only emblematical. The probability of the case, the circumstances of the recital, and the testimony of authors, demonstrate to us that this emblem was that of the solar revolution. I would, then, ask you, Sir, how the Egyptians could acquire the idea of the death and new birth of the sun? The phenomenon of his setting could not inspire them with this idea. How melancholy soever the darkness which the going down of the sun spreads over the world, many days had passed over, the same appearances had frequently occurred, the sadness it occasioned had worn off by habit, before it could come into men's minds to invent emblems, and to paint the physical phenomena by fables. The emblem of the phœnix did not denote the year among the Egyptians, or, at least, this application of it could not be of their contrivance; for the sun is always alive in Egypt: he is always in great force; a circumstance which he owes to his height above the horizon. This is not the case in the northern climates: there the sun disappears every year, for a time more or less considerable. His absence is a time of weariness for men, and of languor and inactivity for Nature. The departure and re-

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turn of this luminary, suggest the idea of a real death, and a real revival: hence the alternate vicissitudes of mourning and joy. This phenomenon could never become familiar to the mind, because it occurs only once a year. Men represented the absence of the sun by that of birds, which follow and disappear along with him. In this figurative language, the sun became himself a bird, which serves them as a guide. The darkness infused its gloom into those ideas. Death and life were the emblems of night and day. The sun, the solitary bird, adorned with his richest colours for his departure, was on his way to die, and come to life again, in the countries of the south, such as Ethiopia. The Ethiopians, at the same time that they admit this fable, alledge, on the contrary, that the bird which comes to renew his life among them, quits a country of darkness; that is to say, climates where night prevails for several months. Those two recitals, of a perfect likeness, belong, then, to the same fable. This fable essentially implies the idea of the loss of the sun, and evidently refers to northern latitudes: I have, therefore, every reason to conclude, that it took its rise in those climates, descended from the north, and was communicated to Egypt.

The circumstance of living three hundred days, determines the climate which produced this fable. It is under the latitude of seventy-one degrees, where the

the sun is absent sixty-five days every year. The fable of Janus holding the number three hundred in one hand, and the number sixty-five in the other, relates to that of the phœnix, as well as that of *Freja*, who, obliged to compromise with her husband on the score of his habitual infidelity, grants him leave of absence from her bed during sixty-five days, on condition that he will be faithful to his conjugal duty during the three hundred that remain. Can we possibly doubt that this fable, which represents the marriage of the earth and the sun, originated in the same climate with that of Janus and the phœnix? Is it not evident, that those three fables mutually support each other? Somebody has imagined, that my object, in retailing those things, was to amuse, rather than to demonstrate. I have too much respect for the public, to think of amusing them in this manner. But, far from meaning to demonstrate any thing by the use of fables, I conceive that they supply certain probabilities for the confirmation of facts; above all, I conceive, that the truth they involve, renders them worthy of the philosopher's attention. Those childish toys were once the workmanship of men of genius. I am persuaded, there is not a fable received and respected by the people, which does not imply some truth, historical, physical, or moral. The girdle of Venus, the bandage of Cupid, Narcissus in love with his own image, are moral fables: that of *Freja*,

that

that of the phœnix, are evidently fables of a physical order.

The fables of Proserpine, of Adonis, and of Osiris, have, in the same manner, a relation to the sun: it was his absence they wept, during the forty days' mourning of Adonis and Osiris. Deucalion carried the worship of Adonis into Siberia; and this Deucalion was by birth a Scythian. There is, therefore, every appearance, that the people of the north, as they descended towards the south, introduced into those countries, emblems that had a relation to the physical constitution of their own climate; and these emblems, in process of time, became fables; then real characters; and, last of all, gods, in imaginations prone to give life and animation to every thing, like those of the Asiatics. In short, if I have traced the line of march pursued by man, born under the Pole, as he descended towards the Equator, inventing all the fables of antiquity, all the different measures of the year, by the physical circumstances of different latitudes; it is, after all, but a philosophical, fiction; singular, from its conformity to the phenomena, and remarkable for its natural solution of fables;—a fiction, however, which has nothing absurd in itself, and to which nothing is wanting, but the support and sanction of the historian.

But we ought to confine ourselves strictly to facts: those are the basis of true philosophy. The first, then,

then, of the facts I have mentioned, is the existence (in my opinion, reduced to a demonstration) of people of greater antiquity than any among all those that are known, and a state of science carried to a high pitch of perfection by that people: the second is, the place of their residence; which, as I presume, lies under the parallel of fifty degrees; and I presume it from facts sufficiently evident and conclusive.

The tygers of the north, who laid waste the south of Asia, had undoubtedly neither quadrant nor cross-staff; but observe, Sir, I entreat you, that when I say the people of Tartary enjoyed the light of science, I have in my eye men who existed from three to four thousand years before the barbarians whom you describe. We should with equal reason conclude, that Greece never had either a Sophocles or a Demosthenes, because the Turks, who presently possess it, are an ignorant and ferocious race, who would spread desolation over Europe, if they were permitted to follow their own inclinations.

What, then, is the difficulty of conceiving an enlightened and learned people in Asia, under the latitude of fifty degrees? This latitude is that of Paris, of London, and of Berlin: it is at this distance from the Equator, that the greatest discoveries of modern times have been made. The difficulty, no doubt, is the cold of Tartary, which gives us the idea of hoar-frost and a clouded sky. It was the fine nights of

India

India and Chaldea, which induced philosophers to assign to those countries the invention of astronomy. But, Sir, is every night in northern latitudes overcast with clouds? Have you not an idea that long nights ought to be favourable to observation? If the heavens are ever serene in high latitudes, the observer has a great advantage; I mean that of pursuing the stars in their motion, for long intervals of time, free from the ordinary interruptions of our climates, arising from the alternate returns of day and night. Does any body fancy that astronomical observations are impracticable in Tartary? Father Gerbillon travelled eight times into those parts, in the suite of the Emperor of China, towards the mountains of Atlay, and, for the greatest part, under the parallels of 48 and 49 degrees. He gives us a vast number of observations of meridian heights of the sun*. The Russians have made frequent observations in Siberia, and under the highest latitudes; circumstances which prove, that the climate of Tartary did not preclude observations from those who were desirous to make them.

I am aware, that my opponents will insist less upon the difficulty of making observations in Tartary, than upon their facility in India and Persia.

It is said, and perhaps I have said so myself, that the beauty and uniformity of the heavens in the south

* Hist. des Voy. tom. xxviii. and xxix.

of

of Asia, gave occasion to the invention of astronomy among the natives of that happy climate, and rendered them astronomers in spite of themselves. But in order to understand each other, we must first of all define our terms. What, then, is meant by astronomy? Does it consist in a constant care to look at the stars, to reckon the most beautiful, to form them into groups and to mark such as seem to be in motion? If those simple observations, which are the result of the ease and leisure of rural life, mean the invention of astronomy, I am ready to admit that it might take its rise, not only in India and Chaldea, but every where else. There is not a peasant of the country, who does not invent it, in this sense, every day. Such remarks, however, as are made accidentally, generally lead to nothing. To invent a science, is to collect those remarks, for the purpose of investigating their principles: it is to lay down certain truths, as a basis upon which it is proposed to erect a superstructure. I shall probably astonish you, Sir, when I affirm, that it was the uniformity of that beautiful sky which prevented the people of India from making the smallest progress in astronomy. This magnificent spectacle is not enough: men must have eyes that know how to look at it; minds capable of reflecting upon what they see, and which have from Nature the faculty of passing with some rapidity from one idea to another. The serenity of

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the heavens is an image of peace and tranquillity: it has a necessary affinity with uniformity of character and indolence of mind. This uniformity is incompatible with genius; nor does indolence admit of invention. We stand in need of a variable sky, to diversify our ideas, and to excite in them that circulation which gives birth to discovery. The same variable sky which occasions inconstancy of humour, produces those discoveries; a great proportion of which is, perhaps, nothing more than the effect of the restlessness of our ideas.

It is because the natives of the east see nothing beyond what is established, that they content themselves with a government the most absurd and oppressive to human nature, that it is possible to conceive, viz. that of despotism. They support this iron yoke without a murmur; just as they look at the heavens without admiration. Their adoration shews that they regard the despot as of a superior nature. The care he takes never to appear in public, marks the duration, but not the origin, of this species of idolatry. Farther, flattery may go the length of deifying princes; but flattery knows well, at the same time, what it ought to think of them. In Asia, this is not a voluntary absurdity: it is an ancient and deeply-rooted belief. When I figure to myself the people of the south, enervated by the ardent rays of the sun, sinking still lower in effeminacy from ease and affluence;

ence; losing, with the force of the body, the courage of the soul, and the boldness of the understanding; when, on the contrary, I see towards the north, the natives, hardened by an active life, prepared for war by the exercise of the chace; compelled to apply to labour and industry, and, in a climate which denies them almost every thing, deriving from the climate itself the power to seize them, as it were, by force;—I cannot help thinking, that when the last descended among the former, whether as conquerors, or legislators, their superiority must have made the most lively impression. Men humbled themselves in the presence of force and knowledge: incapable of pretending to an equality, they fancied they saw in these masters, or benefactors, come from a foreign country, men of a different nature from themselves. This veneration, or rather error, has been permanent, like every impression on bodies that have no elasticity; and the imbecility of the people has retained for their successors, devoid of force and genius, a degree of respect scarcely due to the founders of their empire.

Let us agree, Sir, in this important truth. Effeminacy must yield to labour, in the long run: labour must subdue the world. But labour grows and thrives in a rugged and difficult soil: it requires a state of nature, which invites by promises, and not that which gives without waiting to be asked. It is the native of a country of torrents, which ravage the

plains;

plains; of a country where the heat of the sun is opposed by frozen winds; where the one inspires hope, and the other inquietude. It is there that man exerts all his strength, because he has Nature for his antagonist. It is there that industry is the child of want. We observe the same thing in the different races of animals. Such as live upon grass, whose subsistence is easy and abundant, are timid, lazy, and stupid. Other animals, such as the fox, and the wolf; subsisting by rapine, opposing cunning to precaution, making up by the boldness of enterprize for the rarity of opportunities, are courageous and intelligent. If industry depends in all cases upon a certain organical conformation in man, as in the other animals, it is developed by difficulty of situation. It cannot be looked for, then, in the fine climates of which we speak, both because there the sun relaxes every nerve, and because, there Nature leaves nothing to be done by the hand of man? You have expressed it yourself, Sir, it was from the north that tygers came; wolves who devoured the lambs of the south; but consider, I pray you, that the lambs were a silly race of people, and that the tygers were men civilized and instructed.

It is therefore probable, that population, conquest, slavery, and science, extended themselves upon the globe, from north to south. Should you find any tolerable accuracy of thought in the reflections I have

thus submitted to your philosophical discernment, it will inevitably follow, that the two ideas, of the earth's obtaining her population, as well as the light of science, from the finest climates; ideas which appear so natural and so conformable to truth, when carefully examined, are discovered to be conformable neither to fact nor the nature of things.

The progress of the sciences from north, southward, is stated in my History of Astronomy as a probable opinion only: I was at variance with received opinions, and it became me to be diffident of myself. But is not the probability of my system very much increased at present? Is it not singular, that M. De Buffon, discovering the gradual refrigeration of the earth, conceived the idea that men must have originally inhabited the flats of Siberia; plains of a higher elevation than most mountains of the globe, therefore the first cooled down, and of course the first that were in a habitable state; that M. Linnæus, upon discovering the climate where wheat grows naturally, was led to the opinion that men lived in Siberia before their dispersion, inasmuch as the food, whose use is almost universal, is a spontaneous production of that climate; in short, that I, who esteem myself infinitely honoured by being associated with these two celebrate[d] names, have been induced, by a train of facts, to assign the invention of astronomy to Selinginskoi, in those climates first lowered in temperature, according

cording to M. De Buffon; in those climates where wheat grows without culture, according to the Swedish botanist? No manner of communication took place between us: it was by a different route, and after starting from remote positions, that we have arrived at the same goal. If man has any certain criterion of truth, it should seem it ought to be when it is found at the coincident point of different inquiries, and when it is the result of a variety of facts.

It remains, Sir, that I should prove to you, that the hypothesis of M. De Buffon, in respect of the earth's refrigeration, is more probable than is commonly imagined; that it contains nothing repugnant to the laws of Nature; and above all, that it is perfectly worthy of the genius of its author.

I am, with respect, &c.

NINTH LETTER TO M. DE VOLTAIRE.

[Of central fire, or the internal heat of the globe.]

Paris, 19th Sept. 1776.

You have never read the doctrine of central fire: I shall then, Sir, have the pleasure to explain to you this beautiful system; I should rather have said, important discovery: it is the basis of the hypothesis of the earth's gradual refrigeration; and it is with this, of course, it is proper I should begin. Give me leave to observe, that Tartarus has no connection with central fire. Tartarus is the image of conscience in wicked men: physical truths are only revealed to minds pure and tranquil. The virtuous Mairan, who first made the discovery of central fire, was born for the Elysian Fields, where his meek and placid philosophy would have amused the shades, by the recital of his ingenious system.

Tartarus is a moral and philosophical tale, whose object was to alarm the minds of guilty men. The Greeks, who viewed it in a literal sense, placed Tartarus in the bowels of the earth; and here also, in her bosom, in the midst of the terrestrial mass, resides the central

central fire of M. Mairan: but instead of being the place of torments, it is the vital source of a beneficent heat, which revives and animates vegetation, and maintains life over the face of the globe. Without this, we should never have existed. If the heat of the sun alone produced our summer, when this luminary withdraws from our climates, when he sinks upon the horizon, and sends us only his pale and languid rays, frost would annihilate every thing: men, animals, plants, falling to ruin, would leave us only an arid desart; nor would the earth afford us an asylum any where but under the line, where the sun has fixed his abode, and over which he presides like a father.

This, Sir, is what I propose to prove to you, by pursuing the steps of a philosopher whom we sincerely regret.

It should seem, that there is a vast difference between the cold and heat which we experience on this globe: a man perishes under the burning heat of the sun, in the desarts of Africa; he perishes among masses of ice, in the desarts of Siberia. As to our Temperate Zone, the scorching heat in some of our summers, seems separated by a wide interval from the celebrated cold of 1709, and, indeed, from that of the year 1776. But our senses deceive us: frail beings, who creep upon the surface of the earth, we sink under the smallest weight; we die by the slight-

est change! To our limited scale of measure, every thing seems enormous, but what lies beyond our reach; and while we would comprize Nature within the narrow sphere of our own conceptions, we magnify each object of sense, by applying it to the small rule of our sensations. It would have required the construction of instruments, exempt from the agency of external causes, to shew us how to make a proper estimate of our feelings. Until the æra of the invention of comparative thermometers, we had no real knowledge of the temperature of seasons and climates.

M. Amontons compared, upon his thermometer, the heat of summer with that of winter: he found they were in the proportion of 60 to 51½, or 7 to 6. Thus, as M. De Fontenelle has observed, *the same matter which produces, by the agitation of its parts, the greatest and most intolerable heat of our climates, having then seven degrees of motion, has still six when we experience an extreme cold**. It was, no doubt, the singularity of this appearance, that determined M. De Mairan to calculate in the two seasons with greater precision, the different effects of the sun's rays. He communicated the result of his inquiry in 1719; but I shall only mention to you, Sir, the memorial he published in 1765, where he explained his ideas, and bestowed upon his calculations all the ac-

* Hist. de l'Acad. des Sciences, 1702, p. 7.

curacy

curacy of which they were susceptible. I shall not even give you the trouble of entering into the detail of his calculations: I have no intention to ascertain the quantity of this central fire, but only to prove its existence. If I should weaken the effect of those calculations, by resting them on simple principles, without the reach of attack, I shall only render the fact itself the more evident.

Various causes concur, in rendering the heat greater in summer than in winter. First, the elevation of the sun makes his rays fall in a greater quantity upon a given space; and the heat, every thing else being equal, is in proportion to the quantity of his rays: secondly, his greater elevation gives occasion to long days, when the presence of the sun heats the earth in a greater degree than it is cooled down by his absence: thirdly, it follows likewise, from the sun's height, that his rays have less way to travel through the atmosphere, before they come to us: they are less blunted and enfeebled by the resistance they meet with from the grosser atmospheric particles. A cause of little moment, tends to diminish these effects; I mean the sun's greater distance from us in summer than in winter. But this cause, which might be strictly appreciated, is so trifling, that we shall pass it over here. Besides, I shall make sufficient allowance for it, by passing over the third cause; though the effect of it is a good deal more considerable: but

to estimate its quantity precisely, would oblige me to enter into a discussion which I ought to avoid. By neglecting this third principle, I weaken the cause which it is my business to defend; but the result will only be the more conclusive. I confine myself, then, to the two first, which we proceed to estimate.

The quantity of solar rays that fall upon a given space, is proportional to the sine of the sun's elevation, or of the angle which his rays make with the horizon; consequently, M. Halley, to whom astronomy, geometry, and physics, are so much indebted, estimates the effect of the solar rays in summer and in winter, in the proportion of the sines of the sun's elevation *; that is to say, nearly in the proportion of three to one, for the climate of Paris. We may then affirm, that Paris receives three times more rays in summer than in winter. M. Fatio, an English geometrician, thought that we ought to have some regard to the perpendicularity of the rays, which strike with more force, according as they have little inclination; and this consideration giving, in like manner, the *ratio* of three to one, he found that the heat of summer, exclusively of every other cause, must be to that of winter as nine to one †. But it is objected, that the different portions of ground, being differently inclined, receive rays under every possible

* Trans. Philos. No. 203.

† Fruit-walls improved, by inclining them to the horizon, p. 39.

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inclination, and that there is no reason for choosing one rather than another. I prefer, with M. De Mairan, to consider the quantity of rays, and to estimate the heat which results from them, by the proportion of three to one; at the same time wishing you to remark, Sir, that I always abide by the calculation least in my favour.

The effect of the length of the day in increasing the heat, is no less obvious. Each day, as it becomes longer, impresses the earth with a greater degree of heat: each night, which is at the same time shortening, carries it off in a smaller portion. It is clear from this reasoning, even exclusively of experience, that the heat must be augmented, by accessions becoming constantly greater, and by a real acceleration. M. De Mairan calculates this effect in a geometrical way, and according to the laws of accelerating causes; and thinks, as it should seem, with much truth, that it is in the ratio of the square of the time that the sun remains under the horizon: hence he concludes, that the heat of summer, in this view, ought to be quadruple of that of winter. But, to abide by what is simple and sensible, we will dispense with this ratio of the square of the time, though I conceive it to be more exact, and confine ourselves to a single observation. The length of the day at Paris, at the summer solstice, is sixteen hours; at the winter solstice it is only eight hours: the sun remains, then,

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above the horizon double the time in the one season that he does in the other; he must heat the earth, therefore, at least in a double proportion; and as Paris, then, receives three times more rays, it follows that the heat must be at least six times greater.

M. De Mairan, by weighing those causes as I have stated them, and as he ought to do, in order to be accurate, and by attending to the cause which I have left out of view, finds that the heat is almost seventeen times greater. If we were to admit M. Fatio's account, we should triple this estimate, and the heat of summer would be fifty times greater than that of winter.

As I only propose to make the truth sensibly apparent, the calculation which I bring under your view, shelters me from every difficulty. It will not be denied, that the climate of Paris receives three times more rays from the sun in summer; and as this body remains twice as long above the horizon, it is perfectly evident, that the heat of summer is at least six times greater than in winter.

It will be my business at present, Sir, to consult the thermometer, and to find from it the proportion between the temperatures of the two seasons. But before we consult this instrument, it is proper we should know it: we ought to have a precise notion of heat and cold, and appreciate the necessary relation that exists between their increments and the progres-

sion of degrees upon the scale. I am about to trouble you with a repetition of many things you know. I am sensible I speak to a man of an enlightened mind: you have displayed equal sagacity for the study of Nature, and genius for representing her with your pencil: but the developement of my ideas, and the method which they require, prescribe me a plan from which I must not deviate.

The thermometer shews, intrinsically, nothing but the degrees of expansion and condensation of fluid substances; but observation founded upon these, is certain. Wherever there is heat, there is expansion: the moment cold becomes sensible, bodies contract, and condensation begins. Fluids are the substances the most exquisitely sensible to those variations: it is usual to employ the spirit of wine, and mercury, in the construction of thermometers: that of M. De Reaumur, which we will take as an example, is constructed in such a manner, that the space of a degree $\frac{1}{1000}$ the thousandth part of the space contained in the bulb, and a part of the tube extending to the point of freezing. Thus, when the fluid setting off from this point, rises to the mean temperature; that is to say, to ten degrees above frost—that indicates that the fluid is dilated; and that being contained formerly in a space expressed by a thousand parts, it now occupies one of larger extent; insomuch, that these spaces are to each other as 1000 to 1010, or 100 to 101.

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It is, therefore, by the quantity of expansion tha we judge of that of heat: it is by the quantity of condensation that we ascertain the intensity of cold. But condensation and expansion, cold and heat, are but one and the same thing; there is no real difference but in degree. It is the developement of a similar effect, which, whether it increases or diminishes, belongs to one individual cause: condensation is a diminution of expansion; cold is nothing but heat in a smaller degree. Cold has no real or positive existence; it means a privation only. Heat alone has a reality of action, which animates Nature, and communicates motion to all material substances. Absolute cold would be nothing else than a total cessation of life and motion. The rime which whitens our plains, those winds which pierce us with their frozen blasts, bring us only a smaller degree of heat; they suspend vegetation, and permit us to live.

There exists, then, in Nature, a scale of degrees of heat, whose upper extremity is the point where all fluids heated by the action of the fire, and in a state of constant ebulition, would be volatilized; where the most fixed earthy particles, divided and attenuated by those of fire, would, in like manner, fly off in vapour; where, in fine, could this violence of heat be prolonged? The globe itself, though formed and consolidated by the power of gravity;

gravity, would be destroyed by the expansive force of this element. The other point at the bottom of the scale; is that where this force, no longer animating Nature, where the action of a vivifying heat being wholly extinct, all living beings would perish, and every fluid substance be congealed; where the air itself, being deprived of its spring, together with every native quality, would fall down upon the torpid earth, thenceforth to form with her but one dead and solid mass. The distance between those two points is infinitely great; and if Nature is destined to travel its whole length, she descends but slowly, and will not reach the extremity before thousands of ages have elapsed. In the period of our short existence, limited as our faculties are, it is impossible for us to know more than a very small interval of the scale: life is placed between those destroying points, between those causes of death. The goodness of the Supreme Being has removed them far from us; they lie equally out of the reach of our view; and their distance, which genius may one day be in condition to span, human industry has hitherto been unable to measure.

Meanwhile, in order to compare the temperature of summer with that of winter, it would be necessary to know the sum of the degrees of heat in one and the other season; it would be necessary to set out from an unknown point of the scale. To sup-

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ply the defect of a rigorous accuracy and absolute values, which are almost always concealed from us, the human mind employs approximation, whose method has been so much varied and perfected: it proceeds to the very extremity of its means, and if it does not attain to the concealed truth it pursues, it at least knows it lies beyond it. In almost every species of science, the knowledge of limits is the most certain of all our knowledge.

If it is not in our power to form an idea of absolute cold, which cannot exist till we are dismissed from the earth, we must confine ourselves to the consideration of its greatest possible degree. The most violent which we have yet experienced at Paris, we ought, it should seem, to assign to the fifteenth degree below frost on Reaumur's thermometer. At St. Petersburg, the mercury descends in this thermometer to thirty-one degrees, and, in Siberia, it has fallen even to 70° below the same point. In those climates, however, men live, and perpetuate their species: life there preserves the greatest part of its functions and activity. We must conclude, then, that absolute cold lies far beyond seventy degrees of the thermometer. Let us keep in mind, that there the mercury retains all its fluidity.

It is an interesting spectacle to see Art adding to the energies of Nature; the human mind asking

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her questions, forcing her to explain herself, and reveal secrets that she concealed in her deepest recesses, or reserved as the discoveries of future ages. Fahrenheit was the first who endeavoured to augment the cold by artificial means. You know, Sir, that we produce ice in summer by the mixture of salt and snow. The voluptuaries of our time, who create summer in their winter apartments, love to have their liquors frozen for their dog-day repasts. By mixing the spirit of volatilized nitre with snow, we obtain an additional cold, and its intensity is in proportion greater, according to the actual severity of cold in the surrounding atmosphere, since the refrigeration which arises from the mixture, is incorporated, no doubt, with that which the two substances derive from the common medium. Fahrenheit was not able to make the mercury fall lower than a point which corresponds to thirty-two degrees of Reaumur's thermometer. Thus he fabricated at London the same cold which is experienced at Petersburg. It was natural to imagine, that it might be possible to make it sink lower in a colder country. The Russians profited of the sorry advantage that they have in this respect over other nations, and made the most curious experiment of the age. On the 25th of December 1759, the thermometer being at 29°, M. Braun * suffered the spirit of nitre

* De admirando frigori artificiale.

and

and snow to cool down to the actual temperature; he then prepared the mixture, and plunged the thermometer into it: the mercury fell to 170 degrees. The bulb, which had began to crack, was then broken in pieces; and the mercury was found in part frozen and malleable like a piece of lead: a discovery which, as M. De Mairan observes, would alone suffice to give celebrity to any name: a discovery which assimilates mercury to all the other metals; inasmuch as those metals, when exposed to a certain heat, become fluid like it, while mercury, in a cold of 170 degrees or more, becomes solid like them. M. Tomonosow * repeated and pursued this experiment with still farther success. On the 6th of January 1760, the cold had increased by two degrees: a similar thermometer, but probably of greater strength, was plunged, without the smallest accident, into snow mixed with the spirit of nitre: the mercury fell in the mixture all the way to 592 degrees; it was then entirely frozen, and converted into an absolutely solid mass.

Here then we have obtained 592 degrees of cold; and if we always recollect, that we advance towards the limits of Nature, but never reach them, we must conclude, that absolute cold lies still greater beyond that point. A few reflections will suffice to set those limits at an infinite distance. If Fahrenheit,

* De solido et fluido.

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with the most intense cold that is felt at London, which was perhaps of ten, twelve, or fifteen degrees, was only able to produce an artificial cold of thirty degrees, or nearly the double: if the Russians, with a cold of thirty-one degrees, could produce a cold of 592 degrees, that is to say, twenty times greater, what an enormous cold might we not expect to produce in Siberia, where the thermometer sinks sometimes naturally to seventy degrees! We observe, that those two artificial colds are in a proportion vastly greater than that of the different temperatures of the atmosphere: what would be the consequence, then, if the same proportion was equally to hold in a repetition of the experiment in the centre of Siberia? But upon the supposition that the result were only in the proportion of those made by the Russians, it would be possible to obtain a cold of nearly 1400 degrees. You will carefully remember, Sir, that this cold is not the work of man: the utmost exertion of art can effect no more than to render it sensible. It is not within the compass of our power to create one atom of heat: we are as little able to make Nature descend to a degree of cold that does not belong to her; and while we rob bodies in this manner of a certain portion of their heat, we are, at the same time, sensible that we do not exhaust it.

M. De Mairan, who has supposed absolute cold at 1000 degrees below frost, does not seem to have supposed too much. M. De Buffon imagines that this limit might be carried down all the way to 10,000. In fact, Sir, can we suppose that it is in the province of Art to produce absolute cold; a point to which Nature can only fall by a long continuance of insensible diminution? Habituated as we are, constantly to find our operations below the capabilities of science, we may form some idea of the prodigious difference between the product of human means, and the result of such as she employs, whether for her preservation or destruction. But the eagle-eye of genius pierces far beyond the boundaries of our view, and seizes relations which we are unable to distinguish. The computation of M. De Buffon, in spite of the confidence that his authority inspires, may be deemed arbitrary. Faithful to the plan which I have proposed to myself, I wish to compare all the results, in order to render the differences, though less considerable, yet more sure, or, at least, more conclusive. We will lay it down, then, as a manifest consequence of the preceding experiment, that the point of absolute cold lies below the thousandth degree of Reaumur's thermometer.

It is from this ground, from this point we will set off, in reckoning the degrees of heat, and in comparing

comparing the temperature of summer with that of winter.

In considering a series of observations made at Paris in the course of fifty-two years, upon the greatest degree of summer's heat, we find the mean quantity taken from fifty-two observations, is twenty-six degrees above the freezing point; and as we suppose 1000 degrees below it, it hence follows, that the greatest summer heat at Paris is 1026 degrees. It is found, in the same manner, that the mean cold, taken at a great number of years, is seven degrees below frost; and as this point has itself 1000 degrees of heat, it follows that the mean cold of our winters retains 993 degrees of the necessary heat. Here then are the two quantities which express the relation which the heat of summer bears to that of winter. Those two heats are as 1026 to 993, or as 32 to 31. So that between the heat that burns us, which obliges us to seek the salutary freshness of woods and rivulets, and the cold which requires furs and powerful fires, there is but a thirty-second part of difference; and this difference is the very largest that we can admit; since, if instead of supposing absolute cold at 1000 degrees, as I have done, we had carried it on to 2000 degrees, a case in which we should have been warranted by sufficient reasons, and without giving too great an extension to the result of the experiments, that difference would not

have exceeded one sixty-second part. Thus we have two facts which we can compare; one, that the difference of the heat of summer from that of winter, as observed in our climates with the most accurate instruments, is only a thirty-secondth; the other, that the heat dispensed in summer by the sun, is at least six times greater than that which he dispenses to the same climate in winter.

You will agree, Sir, that the difference between those two facts is prodigious. One should imagine, that when we are surrounded with ice, we ought to have lost more than five-sixth parts of the earth's heat; in reality, however, we have lost no more than one thirty-secondth part. It is found from a very simple calculation, that in order to reconcile those two facts, equally undeniable, we must conclude, that the earth contains in winter a stock of heat about 150 times* greater than what she receives from the sun in the same time, and twenty-five times greater than that of his summer rays. I ask, then, whence comes this heat which the sun does not dispense to the earth, and which she retains in his absence? M. Mairan obtained this discovery by means of observations he made upon the earth,

* M. De Mairan finds 500 times, by a calculation which appears to me exact, because he fixes the relation between the two seasons in the proportion of seventeen to one. I repeat, that it is my business to make the relation sensible, but not to determine it.

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he tells us, that it is central or internal; that is to say, inherent in the globe. This is the most simple hypothesis that could be imagined, in order to account for a fact so singular, and, at the same time, so clearly demonstrated. If he has termed it central, it is because, considering it as propagating its genial influences to every point of the earth's surface, it seems to act as proceeding from a central point, but he has never pretended, by this specification, to determine either the place or origin of the cause which produces those effects.

It has been objected to M. Mairan, that this internal heat may have its source in those vitumineous vapours which are exhaled from the bowels of the earth; or in that process of fermentation which makes water boil, and produces the phenomena of volcanoes. But what is meant by fermentation, if it is not an internal motion excited in certain substances, with the aid of a suitable quantity of heat and moisture? Fermentation is occasioned by heat pre-existing in such bodies as are susceptible of it, and, at the same time, by such a state of moisture or humidity as protects it against congelation. Thus the objection alledges as a cause, what is no more than an effect: it is the same thing as to say, that bodies in which there is heat, produce the heat of the globe. But whence originates the heat of those bodies? It could not be communicated to them with any cer-

tainty by the rays of the sun; access to them being in a great measure prevented by the earth's opacity. Our glacieres, where the ice never thaws in summer, our cellars and caverns, which, in all seasons, preserve the same temperature, shew us, that the course of the sun makes no difference, and that the alternate changes of heat and cold are unknown, like the light of day, in those receptcales of darkness. Will it be said, that the earth does not lose in winter as much heat as she requires in summer; and that the appearance observed by M. De Mairan is the effect of that which she has gained and accumulated since the period of her existence? But, in that case, the sum of this excess of heat ought to augment annually; and the Torrid Zone, which was formerly considered as uninhabitable, ought to become so in reality.

Will it be farther alledged, that the earth, like an infinite variety of other bodies, is capable of receiving only a certain quantity of heat? Arrived at this point many ages ago, her temperature remains permanently the same. But here the objection attributes to all bodies in general, and to the earth in particular, a property which belongs to fluids only. Water does not become hotter beyond the boiling point. This property of fluids depends on the circumstance of their volatility; heated up to the point of ebulition, they ascend in vapour,

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and fly off from the action of the fire. Solid bodies, from the very circumstance of their solidity, never acquire the degrees of heat which they are capable of receiving: they must previously pass into the state of fluids. How is it, then, that the earth resists the powerful agency of Nature's fire, while its parts, the most hard and compact, are reduced to fusion, by our furnaces and lenses? A still stronger fire would volatilize them, or change them into sublimates. Archimedes, who invented the lever, required only a fixed point, to turn round the earth: let them give us but a sufficient fire, time, and a laboratory, and we will melt the globe, and convert it into vapour.

Besides, as the original source of this heat would be always at the surface, we ought to experience a greater degree of cold as we descended under ground: the fluid in the thermometer ought to fall, as soon as it is carried to a considerable depth. M. De Gensanne, however, corresponding member of the Academy of Sciences, observed in the mines of Geromagny, near Befort, in Alsace, that the thermometer which, out of the mine, stood at two degrees above frost, when carried to the depth of fifty fathoms, rose to ten degrees: it stopt there, till he descended to 100 fathoms; but having got to 222, it rose to eighteen degrees*. The heat increased therefore, in

* M. De Mairan, Dissert. sur la Glace, p. 61.

proportion as he penetrated deeper into the bosom of the earth.

Here, Sir, is a fact which supplies additional evidence of the existence of this internal heat: and indeed, without it, how can we imagine that the phenomenon of volcanoes should exist under the vast extent of the ocean? How is it possible to conceive that its enormous mass should not freeze to its profoundest abyss? It is known that the rays of the sun do not penetrate into it a great way; of this, the equal and moderate temperature of the sea is a sufficient proof;—but at great depths, entirely inaccessible to the rays of light, the waters of the ocean ought to be continually solid, if a stock of fire still more profound, did not maintain it in a fluid state. I might apply the same reasoning to the earth itself. How happens it that the earth is not frozen, in cold climates, to a greater depth than from five to six feet*? In all places accessible to water, it ought to be converted into ice the moment it comes into contact with earthy masses which never saw the sun. Whence came, then, the sources of that fountain which the French academicians found at Pello, in Lapland †; a fountain whose waters have never been frozen? Whence originate those hot springs which issue from the earth in Spitzberg, under the eightieth

* Mem. de l'Academy des Sciences, 1749, p. 14.

† Mem. Acad. des Scien. 1737, p. 401.

degree

degree of latitude *? Fermentation will not explain those appearances; for, as we have already observed, there can be no fermentation where there is not heat.

When there happens a fall of snow after a frost, that snow accumulates upon the fields, cooled down in temperature: every thing freezes around it: it subsides, however, and melts below. How comes it to pass, that the outward and hardened crust is able to resist the heat of the sun, whilst the innermost surface, which is in contact with the earth, defended by an entire coat of snow, meets with heat enough to convert it into water? Vegetation is frequently found to subsist under frozen snow: there are even, as we are informed, plants that come to flower in that state. The source of this heat, the cause of this vegetation, is then inherent in the earth: it is, therefore, the effect of central emanations.

The equality of summers in all the regions of the earth, is a phenomenon not less remarkable, as well as a proof no less conclusive. Since the thermometer of Reaumur has been carried every where, it has become possible to know the intensity of heat in all climates whatever: hence it is found, that at Petersburg, in Sweden, and Paris, they experience a heat equal to that of the Torrid Zone †. The only difference is, and that, no doubt, is of great moment

* Hist. Gen. des Voy. in 4to. tom. xv. p. 141.

† Mem. Acad. des Scien. 1765, p. 219.

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to the human frame, that here it is temporary, and that there it is habitual: its duration is the circumstance that renders it so intolerable. How happens it, then, Sir, that the heat is not more considerable; that the thermometer does not ascend higher in this Burning Zone, where the sun's rays are for ever vertical, than in our climates, on which he looks but obliquely? We must conclude, therefore, that the earth has in reserve a stock of heat, which is the same for all climates, and for all men. This is the seal of that goodness which the Supreme Being exercises towards his creatures. The distribution of his indispensible bounty ought not to be left to the sun: he dispenses with too much partiality his aspects and his rays. If he embellishes, if he enriches the most delightful climates, at least that motion which is essential to life is independent of him: the source of this is placed in the earth itself, in order that it may be equally administered to all parts of the world.

If you choose to give the name of system, Sir, to this beautiful discovery, it will be a system like that of universal gravitation. Without the imputation of rashness, perhaps, we may regard them as two facts. But if we are anxious to keep within the bounds of a discretion always worthy of praise, we may say, that the phenomena of the heavens are such as they would be, if an attractive force was lodged in every particle of matter; and that the variations of temperature are

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the same, as if there resided in the bosom of the earth a permanent fund of heat, independent of the sun, and whose intensity is infinitely greater than that which is produced by the action of his rays.

You will ask me, Sir, whether the knowledge of this discovery has been as generally disseminated as it deserves; and if it has carried every where along with it that conviction which seems so unavoidable? I answer, that the cause of truth is more durable, though more slow, than that of error. The author of those truths is at rest: he has engraven on brass, and fears not the hand of time. Central heat, or rather the native heat of the globe, whatever be its influence upon Nature, is a secret cause, and hitherto unknown: it does not evince itself to our senses, like the heat of the sun. It certainly was a long time before men could be persuaded that the moon, which shines over our heads, was not luminous in itself. How are we to convince them in winter, when they are penetrated with cold, that they still experience a heat twenty-five times greater than that of the sun in summer; and in summer, when he inflames their blood, that they would perish with cold, if they were only warmed by his beams? A delusive experience shuts its ears against the voice of this truth, however manifest. Men imagine they have the evidence of their senses, for believing that the sun is the sole source of heat and life; and then, from a sentiment of gratitude,

tude, prostrate themselves before him. The author of light was the first God of the universe: the sect of the Guebres is not wholly confined to the limits of Asia: the opponents of M. Mairan are also worshippers of the celestial fire: utility, besides, as the practical application of discoveries, is the circumstance to which they owe their propagation. The theory of attraction, which was destined to perfect geography, navigation, and general astronomy, had to fight its way upwards of half a century, before it was universally adopted: the discovery of the native heat of the globe, which has a less sensible effect upon the sciences, is suffered to remain in the catalogue of philosophical ideas. This may be expected in an enlightened capital, where so many men employ themselves in writing good books, and so many in criticising them. *De tout un peu*, or *a little of every thing*, according to men of the world, is the wise man's motto: we have a great many wise men of this description: they would wish to make business and pleasure go hand in hand: they would be thought to read every book that appears; they pronounce upon a few pages; they make up their opinion in the conversation of their club; they speak from the echo of fame, which is not always to be trusted in making its report; and truth, in the mean time, remains unknown, or misunderstood.

I am, with respect, &c.

TENTH

TENTH LETTER TO M. DE VOLTAIRE.

[Of the refrigeration of the earth, or the decrease of the native heat of the globe.]

Paris, 24th Sept. 1776.

ALL men, you know, Sir, do not see in the same manner: I have the misfortune to be short-sighted: it has often happened to me, to be humiliated in the open fields. Whilst I can scarcely distinguish a house at the distance of a hundred paces, my friends inform me of things which they see five or six leagues off: I open my eyes, and fatigue myself, without perceiving any thing; and I am sometimes tempted to believe, that they amuse themselves at my expence. It is true, I have my revenge: I read the smallest character with perfect ease, while they are obliged to put on their glasses. The difference which takes place in the eye-sight, is equally applicable to the mind, in respect of the observer, and the man of genius. These two kinds of men know each other imperfectly, and esteem each other but little. The man of genius, lifted up by his own powers to a great height, commands a vast horizon: the

the diligent observer, stationed a great deal lower, collects facts one by one, as they present themselves around him. The man of genius is wrong, in having little consideration for the useful observer; but he, when he makes him the same return, is still more to blame. We ought not to find fault with such as have a long sight: time will bring the objects within our reach; and the great man will be exonerated in the long run.

You perceive, Sir, that I mean to speak of the new ideas of M. De Buffon, respecting the native heat of the globe. Convinced that this heat has a real existence, he thinks it must have been much stronger at the beginning of time; and concludes, that it will suffer diminution in the course of ages. It is a characteristic of genius, to reduce every thing to simple ideas. He has considered the earth as a globe, heated up in some former period to the point of ignition, which cools down but very slowly, by reason of its prodigious mass. From a set of ingenious experiments on globes of various diameters, some hot, and some red hot, he has discovered the time they take to cool. He sought to determine by what law the time increased in globes of a larger diameter; and this law being known, he has ventured to fix the time which the immense globe we inhabit would require, before it descended from a state of white heat to an inhabitable temperature, and then to fall from

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that which we now enjoy, to the absolute cessation of heat; to a state of ice and death, which must be the final period of all things. I hear the critics exclaim, Is it for us, insects of a day, existing on a grain of sand, to calculate the past and future duration of worlds! Be it so: laying aside calculations, we shall have nothing to do with the duration of time: I am ready to admit, that they are by one half too much or too little. This is not the point I mean to defend: it is not those calculations to which is affixed the seal of genius: it is the original idea which serves for their basis. Here, truly, we have the masterly execution of M. De Buffon: here is an idea, which I am bold to prophesy will descend to future generations.

M. De Buffon knows but one law in Nature; it is that of existence, and the destruction of existence. Except God, all beings, all bodies, are formed, and grow up towards maturity, only to decay and dissolve. This idea is grand, simple, natural, and worthy of its author: the refrigeration of the earth is nothing but an inference from it. The internal heat of the earth is a production of creative power; one of Nature's works. Why, then, should we suppose it eternal? Does the motion which impels this heat from the centre to the surface, there meet certain limits that it cannot pass? Ought it not, on the contrary, to diffuse itself still farther, and be dissipated by the

the law of the continuance of motion? This heat cannot sustain vegetation, circulate in the canals of the sap or vegetable juices, without losing itself, as it emerges from the external orifices of those vessels: it wastes itself, only because it warms us. My taper consumes itself by affording me the benefit of light: the fire of my chimney goes out, if I am not at pains to keep it alive; and as nobody has told me that the internal fire of the globe receives fresh fuel, I must thence conclude, that it will one day be extinguished. I am sensible that the objects in this comparison are very inconsiderable, when applied to the heated mass of the earth; but all beings, all things, great and small, are equal in the presence of the Supreme Mind, and in the presence of Nature, which is his minister; a truth which has its foundation in physics, as well as in morals.

After these reflections, does not the refrigeration of the earth appear to you, Sir, an idea as probable and natural as it is great and interesting? If the very strong reasons I have explained in my preceding letter, have shewn you the existence, and sensible activity of the native heat of the earth, it seems natural thence to infer its decay, as announced by M. De Buffon. This theory, however, would be a mere philosophical idea of little consequence, if it had no other foundation than probability. But I am now to lay before you facts of different kinds, which

re effects of the refrigeration of the earth, and hence receive their explanation. A tradition prevailed among the ancients, that the Torrid Zone was uninhabitable, or, at least, that the wretches condemned to live in it disbelieved in the gods, whom they charged with injustice, and blasphemed the sun, their tormentor *. A traveller of the north found a tradition of an opposite kind in Siberia; the natives informed him, that their country had been vastly hotter before the deluge †. I do not pretend to quote you these two traditions, Sir, as decisive evidence. I am aware they may be no better than the result of prejudice destitute of any real foundation. I mention them, because it is not a little singular, and worthy of notice, that we find in the world two traditions so favourable to M. De Buffon; two traditions so characteristic of the effects which he announces: a diminution of heat in the Torrid Zone; an increase of cold in Siberia.

This observation leads us to another, which suggests a similar conclusion. You know, Sir, those famous pagodas in India, the temple of Cananin, in the island Salset, near Goa, and that which stands on the Elephantine isle, in the vicinity of Bombay. Those temples, walled in by the sides of a moun-

* Strabo, Geog. lib. xvii. p. 822.

† Everart Isbrants Ides, Recuiel des Voy. au Nord; tom. viii. 48. Mem. de l'Acad. des Sciences, 1727, p. 312.

tain, are dug in the rock with incredible labour, which marks the mighty exertions of a great people. The ancient Egyptians and Ethiopians had, in like manner, vast subterraneous structures, where they concealed those pillars of stone on which they engraved the principles of science. But what is the meaning of those profound excavations, which must have cost so much time, and occupied so many hands? How comes it that they have been found in the Torrid Zone only, and never in the climates of the north? For what reason worshipped they the gods under ground, out of the reach of day? What I am about to suggest to you, Sir, is nothing more than a conjecture, but it is so closely connected with the idea of the refrigeration of the globe, that I cannot suppress it. If man has always made the gods according to his own image, he could not miss to lodge them like himself. The human race, it is probable, inhabited, in those days, caves and subterraneous retreats; they avoided the sun in the day time, and only quitted those places of shelter during the night. Those temples might, originally, be palaces of their chiefs, situated in caverns which were begun by Nature, but augmented and multiplied by the labour and industry of man. When the heat of the earth suffered a decay, and the soil of the Torrid Zone came to be in a more habitable state, men quitted those melancholy abodes, while

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the gods were allowed to remain in their place; and those immense works, those ancient habitations of mankind, shew us still, that, in the climates persecuted by a vertical sun, the country of India was deserted in his presence, and that the first dwellings of men were in the caves of mountains, and in the recesses of the earth.

A fact still more singular and convincing, consists in the impressions of certain plants which are found in stones. Among the immense number of fossile substances, animal as well as vegetable, which lie scattered about in the earth, and often at great depths, those which seem the most ancient, observes the historian of the Academy of Sciences *, are found almost constantly to belong to a continent at a great distance from ours. Leibnitz made an early discovery of this sort, having recognized some leaves of certain Indian plants imprinted in stones of Germany †. M. De Jussieu discovered a great number of them in the stones of St. Chaumont, in the Lyonois ‡. *It should even seem*, said M. De Fontenelle, *that Nature shews something like affectation in this* ‖. All the stones of Chaumont bear the impression of plants, which, in our day, grow nowhere

* Hist de l'Acad. des Sciences, 1742 p. [illegible].
† Ibid. 1706, p. 9.
‡ Mem. de l'Acad. des Sciences, 1718, p. 287.
‖ Ibid. Hist. p. 4.

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but in India; there is not one of them which I bring to the country. The name of Jussieu is a sufficient pledge for accuracy, as well as truth.

Now, Sir, in what manner are we to explain the two facts stated in those observations? The one, of those plants which have been transported into France and Germany, and imprinted in stones: the other, of the same stones, found at a great depth in the earth. The whole of this insinuates a distance of time, as great as that of place. Those plants that have thus left the vestiges of their lineaments in the stones, must have been once on the level of the ground: it was then necessary that they should be covered over with earth, to conceal the secret of the formation of minerals; and that, whether the soil had been laid under water, and then raised by the deposition of sand and mud, or whether it had grown from the corruption of vegetable substances and the spoils of living nature. You perceive how many ages, how many generations must have passed away, before a series of strata of this depth could be formed. But in these two facts, the most extraordinary circumstance is this, that those plants should be found in France and Germany. How should plants, which grow in the Torrid Zone alone, accommodate themselves to our temperature? How happens it that they can no longer take up with a temperature in which they lived and prospered in ancient times?

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I am sure, Sir, you will leave it to others to have them transported by water. It is not easy to conceive, that the organization of plants, always of considerable delicacy, should resist the agitation of the waves for so long a voyage. It is difficult to persuade one's self, that they should have the address to veer round the point of Africa, without either sail or pilot to direct their course. Currents can be of no service in the present case; for particular currents are of small extent, and proceed but seldom beyond the local causes that produce them. General currents prevail from east to west; perhaps there are some which have their direction towards the Equator, from the motion of the tides; but this effect, which takes place equally on both halves of the globe, prevents the waters from extending themselves in a great degree from one hemisphere to the other. Besides, Sir, it would be requisite that these currents should offer themselves very opportunely. One current would be necessary to convey the plants towards the line, and to pass them beyond it as far as the thirty-fifth degree of southern latitude; another, to carry them from east to west, the length, at least, of the longitude of the first meridian; and then a third, to transport them a second time across the line, and to bring them up to our latitude, after a navigation of 6000 leagues. This machinery, Sir, is somewhat complicated. I should just as soon say,

that they belonged to a botanic, and that they are the remains of some petrified cabinet of natural history; for the most genuine and curious cabinets of natural history are in the bosom of the earth. These solutions of the difficulty, however, were the best that could be thought of at the time, but we must confess, that in our day, they have lost their credit. Let us observe once more, that the total exclusion of our native plants, in such an immense quantity of those stones, is a most remarkable circumstance. The degree of probability in our favour is next to infinite, when we infer that these plants had no existence. Now this fact, viewed under two different aspects, offers two similar conclusions. The presence of Indian plants, indicates a greater heat, without which they could not have existed; the absence of native plants indicates, that they waited the approach of a milder temperature, and more kindly influences.

Why should we oppose the admission of a simple cause, conformable to the laws of Nature, derived from established facts, and which gives a probable solution of the most singular phenomenon in natural history? This cause is no other than the progressive diminution of the native heat of the earth. Plants are attached to climate from the circumstance of temperature: and they disappear as soon as the temperature undergoes a change. Thus

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plants, which we see at this day growing in France, grew anciently in Sweden and Siberia; and those which cover the plains of India, once embellished our own fields.

This simple botanical fact, as you will acknowledge, Sir, merits to be well considered: it necessarily leads to important conclusions. If, in the political world, the most interesting events frequently result from the most trivial causes, in the study of Nature, on the contrary, the greatest causes are sometimes brought to light by very inconsiderable effects. This fact, however, stands by no means alone; the animal world presents us with one of a parallel kind: I mean the elephant, whose skeleton has been dug up in different countries, and in countries where the cold is of the greatest severity. This animal is exclusively a native of the Torrid Zone; he is peculiar to that climate, and lives with considerable difficulty in ours; where he is equally a stranger to the pleasure, and the desire of perpetuating his species: he would perish, were he to be transported to still higher latitudes. I shall not trouble you with the bones and teeth of elephants which have been found in France, as it may be said that the Romans brought them along with them in their wars with the Gauls. But the Romans never carried their wars into Ireland; and yet, in 1715, the skeleton of an elephant was found in the northern

part of that island *. The [illegible] of London, it is true, informed the public, that, according to history, St. Louis, in the year 1255, made a present of an elephant to Henry the Third, king of England. It appears little probable, that this elephant should have died in the north of Ireland, and that Henry, setting but little value on so rare a present, should have made him travel through England and cross the sea into Ireland, to amuse a people recently conquered, perhaps still barbarous, and who had neither taste nor curiosity for natural history. But, Sir, St. Louis never sent presents to Canada, where there never was a king. M. D'Aubenton, however, can shew a thigh-bone and tusk of an elephant, which were found in that country †. Those facts are nothing, in comparison of the examples with which Siberia supplies us. There we find a vast quantity of fossile ivory; it forms a branch of traffic for the inhabitants, as well as of revenue for the Czar ‖. The natives, especially such as are idolators, and consequently little informed, the Jakutes, the Ostiacks, say, that this ivory, and those teeth, belong to *mammut*, an animal which never emerges from his subterraneous retreat during the period of his life, and which dies the moment he

* Trans. Philos. No. 346.

† Mem. de l'Acad. des Sciences, 1762. p. 706.

‖ Trans. Philos. No. 312.

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sees the light. As it never occurred to them, that they were the reliques of a species that has been lost in the country, they created an animal on purpose, which, according to them, is never seen. The Russians, however, agree, that those remains belonged to the elephant *. This fact was ascertained at Paris by accurate comparison †. Those bones are dug up of all sizes ‖. It follows then, Sir, from the abundance of those fossile bones, and from their being of different dimensions, a circumstance which indicates different ages, that the animal was in his native country, and in a climate suitable to his nature, inasmuch as he could multiply his kind. It is impossible not to infer from this, that the climate of Siberia was less cold then than it is at this day, and even warmer than the climates of our temperate zones. This conclusion is not new, it was unavoidable. You know, Sir, what has been imagined in order to account for this evident change of temperature. It has not been attributed to an alteration in the temperature of the globe. This explanation, though nothing but the fact itself, was too simple to be apprehended at first: besides, M. De Buffon

* Mem. de l'Acad. des Sciences, 1727, p. 318.

† Ibid. 1762, p. 206.

‖ Trans. Philos. No. 417.

There are to be seen in the king's cabinet, several very large tusks of the elephant, that were found in Siberia.

was still to come. Certain men among the learned have chosen rather to change the position of the globe, to lay it down in the plane of the Ecliptic, and to place the North Pole in the Torrid Zone. They have made a most unmerciful sacrifice of one half of the globe, and a part of the human race; for whilst the earth presented constantly one of her hemispheres to the sun, the other was doomed to extreme cold and the reign of eternal darkness, and all this to find a lodging for elephants. It is, nevertheless, this little circumstance which has overturned the world, and reduced philosophers to the most embarrassing extremities. You see, Sir, I am not anxious to gain popularity to my opinions; this hypothesis would give me a mighty advantage: if the Pole was formerly under the Torrid Zone, I should have little difficulty to persuade the partizans of hot countries, that population began in the north, and that science, as well as men, descended towards the south.

Let us not find fault, however, with the philosophers, the authors of those opinions: they have followed the ordinary zigzag progress of the human mind, which never attains to true, and above all, simple ideas, but by a long and circuitous path. But to give them a grave answer, I will observe, that if this change happened gradually, it must have required several thousands of ages; and it is a very bold supposition,

position, to alledge that the forms of matter, that those spoils of dead animals, should have remained in a state of such preservation, as to be distinguishable after those thousands of ages had expired If the supposed change happened suddenly, this difficulty is indeed at an end; but there arises another: the same revolution, executed by a machine, is not a legitimate experiment, in this case, nor according to rule: it must have been prepared by known and pre-disposing causes. But we do not perceive those causes in Nature, which could effect a motion of such magnitude. It must, then, have been a miracle. But sound philosophy, while it acknowledges God a the first cause, studies Nature as she came from his hands, including all her causes and effects.

It is much better to take part with M. De Buffon, who finds in the globe itself the source of the changes it has undergone; who teaches us that heat, like matter, like any other created substance, is liable to decay. He will tell you, that the population of elephants began to diminish in the north, for the same reason that that of men seems to diminish at this day; that those ponderous masses sought, and migrated slowly after the heat, like those swarms of the human race, and numerous armies, who over-ran the globe; that, in fine, those animals settled in the Torrid Zone; this last retreat, the only country on earth whose temperature agrees with them. There they will con-

continue to live, till this temperature, falling likewise below a certain point, must destroy them; when their species will disappear, with those whose existence depended on a greater heat, but which exist now only in the writings of ancient authors *.

In vain have men shewn a desire to raise difficulties, and to found doubts upon conjectures. Difficulties are sometimes a criterion of truth; but they are oftener obstacles to its progress. Many people exercise the ingenious art of conjecture, without knowing either its use, or its proper limits. To conjecture, is to add facts that are only probable, to facts that have been ascertained, and thus to extend the sphere of our knowledge. Conjectures should never appear but in the train of causes, with a view to multiply their applications. It is inconsistent with the nature of conjecture, to make it ascend, contrary to its proper course, to attack the cause. The region of possibilities is immense; it ought, therefore, to be our business to search for new truths, and not for arms to combat old ones.

I would ask, Sir, if in the science of natural philosophy, there can be discovered a solution more simple, or better founded, than the hypothesis of M. Buffon? It is simple, because it is nothing more than the fact itself—the decrease of heat. It is founded in three

* Of this description is Ammon's horn, and other shells, whose species is lost, and of which nothing remains but the shell.

strong

strong facts: the heat which evidently resides in the internal parts of the earth, and cannot but decay, according to a general law of Nature; plants of India discovered in Europe, which could not be transported, nor have grown here without a temperature equal to that of the climate of India; elephants which have left their spoils in Siberia; a fact which clearly shews, that that climate, now so cold, experienced, in primitive times, the fervid rays of the Torrid Zone.

We cannot doubt, that, according to this hypothesis, the earth would first cool down at the Poles. The waste of central heat would be a little more considerable there, by reason of the flatness of the globe; but the unequal action of the sun's rays contributed most materially to this fall in the temperature. Although the greatest heat of summer has been found every where the same, the sum total of heat, in the whole course of a summer, is very different in different climates: the sun, transmitting fewer rays, discharging them more obliquely towards the northern regions of the earth, restores less to those climates in summer than they lose in winter. It therefore necessarily follows, that of all the countries of the earth, those which lie under the Line ought to have been the longest uninhabited, and that those of the Poles ought to have been first in a habitable state. Thus, in consequence of this gradual refrigeration, the same

tem-

temperature has visited, successively, all the regions of the globe, from the Pole even to the Equator: and here is a striking agreement between reason and experience, between the theory and the phenomena; inasmuch as we find the traces of this refrigeration in the preserved monuments of natural history; monuments which indicate three progressive stages of an extraordinary heat; the first in Siberia, the second in France, and the third in the Torrid Zone, where it still continues.

The decrease of heat will one day become sensible to the observation of the thermometer; but this will be the result of many ages: the object will then be placed at that distance which renders all degrees of vision alike. If there are at present men of sober minds, who are not struck with the force of this truth, let them not find fault with the man of genius, who has a longer sight. None will pretend to dispute his eloquence: the eye of his mind has a superior excellence, as real as that of his language; and the majesty, the elevation of his style, result from that eminence where he took his station, in order to observe and describe the phenomena of Nature. Besides, the idea of the inflammation of the earth, is only new by the connection which M. Buffon has established between it and other phenomena, and above all, by its consequence, the refrigeration of the earth. Des Cartes in his day, imagined that the earth, and other

planets,

planets, were nothing but so many little *incrusted* suns. Leibnitz did not hesitate to affirm, that the earth owed its form, and the consistency of its matter, to the element of fire; and yet these two philosophers had not, by far, so many facts and observations as have been obtained and collected in our times. Do you not conceive, Sir, that an idea which has occurred, in less than two centuries, to three of the wisest heads, bids fair to obtain the empire of the world? But in the mean time, until it takes possession of the general opinion, ought we not to acknowledge its truth and solidity, now that it rests in the doctrine of central heat, and is vouched by two facts in natural history, inexplicable without it?

This heat is unquestionably not a benefit which belongs exclusively to us; nor does the diminution of temperature menace us alone: the planets are all the workmanship of the same hand: they must partake in the same advantages, and share the same fate. If the heat of the sun is insufficient for us, how should it suffice to the globes of Jupiter and Saturn, where it has twenty-five and a hundred times less energy? "Will any rule of analogy (says M. Buffon), permit us to doubt that the other planets contain, in the same manner, a certain quantity of heat, which peculiarly belongs to them, and which must render them capable of receiving and maintaining living nature? Is it not more noble, and more becoming the idea we

ought

ought to have of the Creator, to believe that every where there exist beings capable of knowing him, and of celebrating his glory, than to depopulate the universe, with the exception of our globe, and to despoil it of every sensible being, by reducing it to a vast solitude, where we should find nothing but the desart of space, and frightful masses of wholly inanimate matter *!"

It is my business here, Sir, to examine only the refrigeration of the earth, and the probability of a once greater heat, which favours my belief in an anciently inhabited state of the northern climates. But the extension of the same doctrine of central heat to the other planets, seems to me to derive confirmation from certain appearances which I propose to communicate to M. Buffon, and which I wish you to remark, as an additional proof of the general hypothesis.

Certain calculations made by M. De Buffon have convinced him, that several of the planets cannot be inhabited; some, by reason of an excess of heat; others, by reason of an excess of cold. Jupiter, for example, still highly impregnated with fire, looks forward to the epoch of living beings, which he will not see for some thousands of years: the frozen moon has not a single inhabitant. Indulge me in a few observations

* Hist. Nat. des Mineraux, in 12mo. tom. iv. p. 318.

upon

upon the phenomena of those two extreme situations of Nature.

The globe of Jupiter, with the assistance of our long telescopes, presents us with large dark spots: they have been seen in the field of the disc; but the most remarkable of them, are, what they call belts, and which cross him in the middle. These belts, though the most permanent of his spots, are not always the same: astronomers have observed them to the amount of eight, but most frequently only three: it has happened, that they could see but one. The whole of his spots present themselves all of a sudden; vanish, and re-appear again, in the same manner *. Their thus appearing and disappearing alternately, are a very extraordinary phenomenon. It would seem, that the planet is consigned to a state of constant and general convulsion. These dark and fluctuating spots can be nothing else than seas, which burst from their beds, spread an inundation, and are then swallowed up in an abyss, in consequence of some particular controlling power, which causes them in this manner to rise and fall by turns. A violent disorder in the waters, is the most simple hypothesis; for the commotion would be much more considerable, if those changes took place in the solid masses; if fragments of a continent were tumbling one upon

* *Cassini* Elements de l'Astronomie, p. 401. Mem. de l'Acad. des Sciences, 1708, p. 237.

another; and if the globe itself were shaken even to its centre. Whatever be the nature of those appearances, of which it is impossible for us precisely to assign the cause, it is certain that nothing similar occurs in the habitable earth: there every thing has taken its shape; there every thing is settled and fixed; and this must necessarily be the case; for the industry of Nature, the vegetables, animals, and those small forms of matter, which constitute mere detail, could not appear till the large masses became stable and permanent. The eruptions of volcanoes, cities sinking in ruin, alarming tides, which threaten to inundate a whole country; all those calamities which sweep away so many of our species, and so much of their substance, and which cost so many tears to humanity, are only sensible to ourselves. Italy might be swallowed up in the Mediterranean, and Jupiter would know nothing of the matter. We may judge, then, what sort of revolutions they must be which make such a figure in our eyes, when seen from this globe. It is evident, that in Jupiter nothing has hitherto attained a state of equilibrium; that there is too much agitation in his frame for matter to be consolidated in large and permanent masses, and much less to assume the delicate forms of trees, of fruit, of animals, which precede the existence of that being who is destined to animate and adorn them. The conflict of the elements in the globe of Jupiter,

is a picture of chaos, and of the primitive state of Nature. The science of astronomy, and particularly the phenomena of Jupiter, may furnish inferences and conjectures analogous to the philosophical views of M. De Buffon. In the different stages of planetary existence which he assigns to those bodies, that of Jupiter is one of the extremes: it is certainly a great deal, that the appearances of Nature are so conformable to the ideas of the naturalist; but the moon, where, according to him, life is finally terminated, will supply us with an appearance equally singular and equally worthy of remark.

The moon is the planet nearest to our globe: she is about two thousand times less distant than Jupiter. This distance is farther considerably abridged by the invention of the telescope. We see the detail of the moon's surface with ease: an object as large as Paris might there be sensible to the glass. We are unable to discern the smallest change in her different parts; yet the map of the moon is better known, and more accurately laid down, than that of the earth; insomuch, that the least alteration would be easily observed. It was thought formerly, that her dark spots were seas; but this idea has been abandoned, since certain cavities, or excavations, have been seen in those pretended seas. M. Bouger has proven, that the moon can contain neither seas, nor even a lake of

any considerable size* : she has no atmosphere, or at least her atmosphere is so exceedingly rarefied, as to be unaffected by the ascent of vapours, which, otherwise, would at times hide those brilliant spots, so frequent on her disc.

By carefully observing some of those spots when they are wholly bright, we find that they present the image of a very deep bason of large extent, defined by a rim, or border, uniformly continued, and of a sensible height. The appearance, we are sure, is not that of chains of mountains: they would not exhibit the same regularity: they are actually basons. If it be true, that the sea suffers a constant diminution from evaporation, as men of learning in the northern countries have imagined†, the sea will experience a certain depression; and if it should happen that the globe, arrested by the cold, should resume that perfect solidity which it had in primitive times, before it derived its present form from the operation of fire, the sea, depressed and frozen in its whole mass, and inclosed by the bold coasts of our continents, would resemble, on a large scale, those lunar basons. The aspect of the moon clearly conveys to us an idea of that state which is assigned to her in the hypothesis of M. De Buffon. Her surface is uneven, rugged, and full of cracks, or chasms. It should seem, that the so-

* Mem. de l'Acad. des Sciences, 1757, p. 22.

† Hist. de l'Acad. des Sciences, 1743, p. 49.

lidity

sidity of this body amounts to an absolute privation of moisture: every thing there has the appearance of solitude, and the want of animation; every thing denotes silence, and the absence of life. Though this planet may have no atmosphere now, it will not follow that it never had one; but when a total cessation of its native heat extinguished vegetation, when the waters, and, gradually, all fluid substances, became congealed, the atmosphere, the air (the existence of which depended on this heat), must have perished at the same time, and, falling down upon the planet, froze along with it, uniting itself to the whole; from which it had formerly been separated.

Is not that of the moon, Sir, a very singular destiny? She it was, that by her mountains, her cavities, her supposed seas, inspired our early philosophers with a belief that she was an inhabited planet; she, that suggested to their imagination the notion of the plurality of worlds. At this day, brought nearer by better telescopes, become the object of a closer inspection, she exhibits to us a total aridity, a state of absolute rest, and the appearances of a world consisting of one vast desart, entirely void of living nature. It is the moon, in fine, that suggested the idea, that a planet might be without inhabitants, or, at least, cease to have them.

The pictures I have now traced, founded in those appearances, may be more or less true, in their different

ferent circumstances; but they present two essential and incontestible facts: one, that the surface of the moon, though brought under our view, appears always the same, and seems in a state of perfect rest; the other, that Jupiter, though infinitely remote, that is, at the distance of more than a hundred and seventy millions of leagues, presents us with the phenomena of great and surprizing changes. These appearances suggest two opposite conditions of Nature; two conditions analogous to those which M. De Buffon assigns to the same two planets; to Jupiter, subjected still to the dominion of a raging heat, where the elements are labouring to attain a state of equilibrium; to the moon, already a mass of ice, and where her equilibrium is absolute and universal, because every thing is devoid of motion.

You see, Sir, that the falling of the earth's temperature (a necessary consequence of central heat, resting on two authentic facts of natural history), finds additional support in the system of the universe, the moment we apply this doctrine to the refrigeration of the other planets.

This is all that I proposed to bring under your eye. The heat of the globe appears to me to be a fact of Nature. The announced decay of this heat is a happy conjecture, and agreeable to the best principles of a legitimate natural philosophy. I venture to prophesy, that it will be better understood by ages to come.

come, than it is by ours. You will observe, however, that I have no particular interest in the discussion of these questions. Whether this heat should be permanently the same, or whether it should actually exist, it will not be in the smallest degree less evident, that the knowledge of the Chinese, Indians, and Chaldeans, is nothing but detached fragments of the sciences of a people to whom they were all indebted for the learning they possessed. I have been led to this discovery by the astronomy of those nations; and you have affixed to this truth the seal of your approbation. It is true, you consider the Indians as the authors of those sciences, because they transmitted them to us; but weigh well, I beseech you, Sir, the truths I have detailed in these Letters; consider, that those same sciences passed through the schools of the Greeks before they came to us; and since the Greeks were not inventors, the Indians could only have been depositaries. The facts which seem to place this pre-existent people under the parallel of forty-nine degrees, are equally independent of the doctrine of central heat. This people might very well inhabit a climate of the same sort with our own. We have just passed a very severe winter in Paris; and yet the course neither of business nor pleasure has been interrupted: people attended the opera, and the academy, as usual; nor did the astronomers discontinue their observations in the observatory. You see, then, that

our activity is by no means suspended during winter; a taste for labour still continues, and the sciences pursue their course, notwithstanding the frost. This very parallel, then, this precise latitude, may, in ancient times, have looked down upon a people civilized, learned, happy, and whose knowledge communicated its rays to hotter countries, but less formed for the pursuits of genius.

You see that I have spoken in no view but in support of truth. I have done justice to my illustrious brother academician, without regard of that fraternity which does me honour, or of that friendship which unites us. I have expressed my thoughts as if M. De Buffon had been a Hindoo philosopher. I readily admit that the native heat of the globe, and the phenomenon of its decay, add a high degree of probability to the opinion I have advanced: it could not be too probable, to merit the adoption of M. De Voltaire. Fable, history, astronomy, natural philosophy, are on the same side. Apollo must not be separated from the Muses, and their suffrages solicit his.

I am, with respect, &c.

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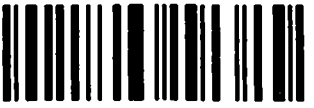
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